

**OWNER-OCCUPIED HOUSING TAXATION:
AN EQUITY EVALUATION OF THE UK AND US TAX SYSTEMS**

Volume I of II

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This research identifies and quantifies horizontal and vertical inequities resulting from selected owner-occupied housing tax policies through micro-simulation. The simulations are spreadsheet constructions underpinned by the respective UK and US tax systems. Within each country-specific simulation case families are established varying with regard to income levels and investment choices. The specific tax policies analysed are the acquisition taxes, property taxes, elements specific to housing affecting income taxes (i.e. mortgage interest relief) and capital gains taxes. In addition to the specific tax policies, the overall tax obligations (the sum of the four specific taxes) are considered. The time frame of the study is a twenty-year period from 1990 through 2009.

A recurring theme in the literature is that homeowners ought to be taxed as investors in rental properties to ensure tenure neutrality or, alternatively, taxed as any other investor to ensure tax neutrality. This research considers the corresponding effects on horizontal and vertical equity by modifying the UK and US tax systems for increased levels of neutrality through further micro-simulation analysis.

Finally, the respective owner-occupied housing tax policy changes and reforms that occurred within the twenty-year period studied are evaluated in terms of enhancements to or hindrances of horizontal and vertical equity. This is accomplished by simulating sixteen five-year periods within the twenty-year time frame and evaluating horizontal and vertical equity on a within-country and a cross-country basis.

What appears to be lacking in the literature is an extensive comparative analysis of the specific owner-occupied housing tax policies and their interrelationship with respect to the complex overall tax system in which they are present. The aim of this research is to contribute to the middle/high range of comparative analytical work. The research is set within a comprehensive theoretical framework and systematically

compares the two countries' specific tax policies and their overall impact on the respective tax systems. The methodology used is consistent between the two countries, ensuring a robust dual-nation comparison.

The US specific tax policies relevant to homeownership and the overall tax system were found to have greater inherent horizontal inequities when compared with the UK tax policies and tax system. Both countries' specific tax systems were found to have varying inherent vertical inequities. The UK homeowner occupiers experience more vertical equity (progressivity) in the acquisition tax system when compared with the US investors. Conversely, the US homeowner occupiers experience more vertical equity (progressivity) in the property tax, income tax and capital gains tax systems. Overall, the US investors experience a more progressive tax system when compared directly with the UK investors.

The abolition of the UK Mortgage Interest Relief at Source (MIRAS) resulted in a less progressive income tax system for homeowner occupiers but one that is more horizontally equitable with other investors. The erosion of the benefits realised from the US mortgage interest and real estate tax deductions has resulted in a more vertically and horizontally equitable income tax system for all but the most wealthy.

Vertical equity was improved by the adoption of the UK council tax in that it is a less regressive form of property taxation when compared with its predecessor. The recent reforms to the UK stamp duty (land tax) have made the system of acquisition taxation more vertically equitable but have exacerbated the horizontal inequity of the system with respect to other capital investors.

The US capital gains tax system as it relates to the homeowner occupier changed significantly with the Tax Reform Act of 1997, resulting in a simpler but less equitable system depending on circumstances.

With regard to the equity of the overall tax systems of the two countries, the UK's progressivity has decreased while the horizontal equity has improved during the twenty-year period, whereas the progressivity of the US system has remained relatively flat with an improvement in horizontal equity.

The author concludes with a call for the gradual repeal of the mortgage interest relief in the US, a subsidy shown to be extremely vertically inequitable in this study and one that was estimated to cost the exchequer \$79 million in lost tax revenue in 2010 by the US Office for Management and Budget. While a taxable imputed rental income may be theoretically optimal, the well-recognised administrative and compliance issues associated with such tax reform make it untenable. Therefore, the second best option and the one adopted by the UK and most other developed nations, is not to allow a deduction for a cost in generating untaxed income.

This research contributes a unique synthesis of methodological techniques to the housing equity literature. The combined analyses of horizontal equity under the classical definition with the chosen structural and distributional techniques in evaluating vertical equity have never been done before. The analysis of the *overall tax system* comprising four specific tax systems is also original in this area of research and employs the Suits (1977) method for determining overall progressivity. There is an attempt within this research to replicate the results derived from the Suits indices by similarly extending the structural indices, thus testing the transferability of the methodology established by Suits. This is the first attempt to extend the structural indices established decades earlier to researcher's knowledge. The results from two of the three structural measures are inconsistent with each other and the results from the Suits indices and therefore not believed to be informative. However, the results from the extended Liability Progression of both countries are indeed consistent with the results of Suits indices. This is an interesting research observation and may be indicative of the transferability of the Suits methodology.

This area of research continues to be discussed by academics and policymakers given the conflicting underpinning theories and continued fiscal favouritism in many developed countries. This research area has become even more topical in the last few years given the recent financial crisis. The multi-layered, comparative micro-simulation technique employed within this research provides a solid platform from which to appraise conventional wisdoms and proposals for future policy with regard to owner-occupied housing taxation and beyond.

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Chapter 1: Introduction

I became interested in the favourable taxation of homeownership during my postgraduate (masters) study from 2005 to 2007. I began my review of the literature during this time without fully appreciating the enormity and fluidity of the specific and interrelated research areas. That appreciation has been fully realised in my subsequent doctoral study.

The concept of taxing an imputed rental income horrified me when my lecturer first discussed it. Equally emotive given my American origin was the idea of abolishing the mortgage interest relief. I was intent on clearly establishing the equity or inequities of two distinct tax systems in my master's research project. My methodology for this project was to quantify and analyse the actual tax liabilities of two countries (i.e. the UK and the US) through micro-simulation. Two types of investor (i.e. the homeowner and the alternative investor) three levels of income (of varying multiples) and a ten-year time frame (i.e 1995- 2004) were assumed. The evaluations of horizontal equity and vertical equity were based on the comparison of the simulated absolute monetary results and structural index analysis, respectively. This was well received by my examiners and I was encouraged to develop the research further through doctoral study under scholarship at Bournemouth University.

It was at this time, in 2008, that the subprime mortgage crisis climaxed fuelling my interest in this area of research. Homeownership has been encouraged for decades in many developed countries, but the degree to which it was so encouraged in the US as to compromise the regulatory oversight of lending worried me. Further, I was incensed by the subsequent fiscal policies introduced in both the UK and the US aimed at kick-starting the housing market again. I was determined then to thoroughly review the literature and contribute a robust evaluation on the equity of owner-occupied housing taxation. My research is topical and original with a continuous focus on policy.

1.1. Setting the scene

Favouritism towards homeowner-occupiers is common in developed countries, but the extent of such favouritism varies and is changing. Recent reforms and the continued debates are the result of the recognised inefficiencies, inconsistencies and inequities of certain owner-occupied housing tax subsidies. Few areas of fiscal policy evoke more impassioned discussions or resistance to change than the favourable tax treatment of the principal residence.

Given its immobility, significant value and assumed social benefits, there are a myriad of tax levies and concessions associated with homeownership. The home provides basic shelter and acts as a vehicle for long-term savings. As such, owners consume housing services for which they need not pay rent and commonly enjoy the capital appreciation of a valuable asset. The product and service diversity of homeownership is one facet of the tax debate.

The preferential treatment enjoyed by homeowners is entirely dependent on the perspective chosen by policy makers. Is the home a consumable product, an investment, or both? If it is viewed as a consumable product, then net imputed rental income and capital gains need not be included in the income or capital tax bases. However, if rents are subject to consumption tax, then so should be an imputed rental income. Alternatively, if the home is viewed as an investment product, the opposite holds true. Net imputed rental income should be included in the income tax base and the capital gain realised on disposal should also be taxed accordingly. Favouritism occurs in tax systems that deviate from these models. For instance, a tax system that allows relief for mortgage interest payments and other associated costs of homeownership (i.e. real estate taxes) while not recognising the imputed rental income, favours the homeowner occupier. Another common example of favouritism is the exemption of capital gains from taxation.

Policy makers commonly justify the tax favouritism of homeowner occupiers with the associated social benefits of such investment. There is an extensive literature identifying specific *positive externalities* stemming from homeownership, the review of which is provided in Section 2.1.1 of Chapter 2 (Literature review). Another growing branch of literature considers the negative externalities of owner-occupied

housing and is increasingly more critical of the presumed positive externalities. This literature is reviewed in Section 2.1.2. The inefficiencies of certain tax subsidies are then briefly considered in Section 2.1.3.

If the Pigouvian foundation, which underpins the literature on positive externalities for the fiscal favouritism of homeowner-occupiers, is becoming untenable, optimal taxation should prevail. The literature on the optimal taxation of owner-occupied housing is a distinct branch to which this research is contributing.

The optimal taxation of owner-occupied housing as stated by the OECD is to tax an imputed rental income (net of expenses including a mortgage interest deduction) and the realised capital gain (OECD 2001, p177). This calls for the recognition of housing as an investment rather than consumable, as has been the recent tendency in the literature.

The OECD's view of optimal taxation with regard to owner-occupied housing is with reference to the neutrality principle stemming from economic efficiency but infers equity as well. This research is underpinned by the theory of optimal taxation; its basic premise being that taxes should be neutral. The literature on neutrality is reviewed in Section 2.2.2. Tax equity may be considered from different perspectives; the two most commonly acknowledged perspectives are horizontal and vertical equity. To be horizontally equitable, taxpayers with the same incomes and similar circumstances should bear the same tax liabilities. Vertical equity is a bit more elusive as it considers the taxation of those with different incomes and circumstances. An appropriate differentiation is called for, but the extent of the differentiation is a matter for political and social debate. The literature on tax equity is reviewed in Section 2.2.1.

The aforementioned sections of Chapter 2 (Literature review) establish the conceptual framework of tax equity analysis. Section 2.3 reviews the literature specific to techniques used to substantiate homeowner occupiers' tax subsidies and the associated tax inequities. Benchmarking is a common technique used to quantify tax expenditures. This refers to an alternative or hypothetical tax treatment against which the tax treatment of homeowner occupiers may be compared. A hierarchy of three such benchmarks has been established in the related literature regarding owner-

occupied housing taxation, with each successive benchmark theoretically moving towards greater tax neutrality and equity. The literature regarding this methodology is reviewed in Section 2.3.3.

1.2. An introduction to the research

This research evaluates the tax equity of owner-occupied housing taxation within two countries: the United Kingdom (UK) and the United States (US). The research takes a multi-layered, comparative micro-simulation approach. This approach is not intended to produce statistical generalisation, but rather theoretical generalisation, given the two countries' different approaches to owner-occupied housing taxation.

The UK no longer allows tax relief for the mortgage interest payments by homeowners, whereas the US has provided such relief since its inception of income taxation in 1913. The UK significantly taxes the acquisition of property at the national level, whereas the US may impose a relatively minor tax at the state and/or local level. The UK taxes the occupiers of property annually, regardless of ownership whereas the US taxes the owners rather than the occupants at the state and local level. The US provisionally allows such property taxes to reduce federal taxable income, whereas the UK does not offer such national tax relief. Finally, the US taxes the capital gains realised on the sale of principal residences over a set threshold whereas the UK exempts such property from capital gains taxation and has done since the inception of the capital gains tax system in 1965.

Further variations relevant to the respective studies include the differences regarding rental property taxation. The US allows a deduction for an annually calculated depreciation of the residential building (i.e. the value of the rental property excluding the land provision). No such allowance is available in the UK's property tax legislation regarding unfurnished residential real property. Also, the UK does not allow net rental losses to offset other income (i.e. general, savings or income from other properties); such losses are effectively ring-fenced and available to offset future net rental income from the same property. The US position on net rental loss allowance is provided in the Internal Revenue Code (IRC) Section 469. The losses of qualified taxpayers may be available to offset general income if the income and participation criteria are satisfied. Any losses that may have been unutilised (i.e.

suspended) are recognised in the year of disposal whereas the UK taxpayers forfeit any unutilised losses on sale.

Chapter 3 (Country Summaries) provides an in-depth discussion on each country's taxes and subsidies relevant to this research as well as general summaries of the respective income tax systems. This chapter serves as an important point of reference for later chapters.

There are four main questions on which this research is focused. Each of these main questions is refined into three sub-questions.

- Firstly, how horizontally inequitable are the owner-occupied housing tax policies (i.e. acquisition taxes, property taxes, elements affecting income taxes and capital gains taxes) in each country studied?
 - How horizontally inequitable are the specific tax policies?
 - How horizontally inequitable is the combined overall effect of the respective owner-occupier housing tax policies in each country on an annual and longitudinal basis?
 - How does the horizontal equity of one country's specific tax policies and the overall tax impact compare with the other country studied?
- Secondly, how vertically inequitable are the owner-occupied housing tax policies in each country studied?
 - How vertically inequitable are the specific tax policies?
 - How vertically inequitable is the combined overall effect of the respective owner-occupier housing tax policies in each country on an annual and longitudinal basis?
 - How does the vertical equity of one country's specific tax policies and the overall tax impact compare with the other country studied?

- Thirdly, what would the effect on equity be under more neutral tax regimes in both countries?
 - How much of the inequities are attributed to the mortgage interest reliefs?
 - How much of the inequities are attributed to the absence of imputed rental income?
 - How much of the inequities are attributed to the absence of imputed rental income and capital gains taxation?
- Finally, how have the countries' recent respective tax reforms regarding owner-occupied housing (all implemented within the time frame studied) affected tax equity?
 - Have the specific policy changes improved or hindered horizontal equity?
 - Have the specific policy changes improved or hindered vertical equity?
 - Have the recent reforms been more or less successful, on a comparative basis, in improving tax equity in the countries studied?

In order to produce robust evaluations of tax equity, micro-simulations using consistent parameters and a representative agent technique have been employed. The micro-simulations are spread sheet constructions underpinned by the respective tax systems of the two countries studied. Within each country-specific simulation fifteen case families are established, varying in two respects. First, the families reflect different levels of income earnings in that there are five multiples of the median income relative to the two countries in 1990. Second, the families vary in terms of their investment choice in that five families of differing levels of income are invested in owner-occupied housing, five in rental real estate and five in alternative (financial) investments. The specific taxes and associated subsidies considered in this research are the acquisition taxes, property taxes, the elements affecting income

taxes and capital gains taxes. The tax equity of each of these four specific elements of the overall tax systems is evaluated separately and collectively. The analyses are first conducted within each country's study, and then comparatively on a cross-country basis. Section 4.5.2 of Chapter 4 (Methodology) provides the calibration of the micro-simulations, detailing the respective constant and variable data for each country.

The time frames in which the studies are set are twenty-year periods, corresponding with each country's respective tax years. For the US simulation, as the calendar year is the recognised tax year, the time frame begins on 1 January 1990 and ends on 31 December 2009. For the UK simulation, as the tax year is a peculiar fiscal year, the starting date is 6 April 1990 and the ending date is 5 April 2010.

The user cost framework is well recognised in the literature regarding imputed rent taxation. It is with reference to this ideology that the incomes of the tenant / landlord case families are established and the imputed rental incomes of the homeowner occupier case families are estimated in the micro-simulations. Section 4.5.2 provides a discussion on this aspect of the micro-simulations.

With an interest in evaluating horizontal equity under its classical definition, micro-simulation using a representative agent technique is the ideal methodology. By establishing case families with accurate tax liabilities determined under the relevant legislation at fixed multiples of a single reference income level (e.g. median income), and alternative case families with modified tax calculations for the alternative investment, the tax impact from homeowner tax policies may be quantified. The horizontal equity measurement in this study utilises a method established by Johnson and Mayer (1962) and was inspired by the research of Berliant and Strauss (1983). This research makes an original contribution to the housing taxation literature in that horizontal equity is determined under its classic definition. Section 4.6.1 provides an in-depth discussion on the horizontal inequity measurement in this study.

Vertical equity is considered with reference to the ability-to-pay principle and with an interest in measuring the degrees of progression. While techniques have varied over the decades, two approaches have emerged: the progressivity of a tax system

may be analysed with regard to the tax structure or the income redistribution effect. This research is original in its consideration of both approaches. Three structural indices are used throughout this research in measuring the degrees of progressivity at the incremental levels and over the established range of study. The Average Rate Progression, Marginal Rate Progression and Liability Progression, which are varying mathematical expressions of the relationship between income and taxation, were established by Pigou and discussed by Musgrave and Thin (1948). The author is unaware of any earlier contribution to the housing taxation literature employing the structural measurement techniques in the evaluation of vertical equity. To complement the structural analyses, the Suits (1977) technique of measuring progressivity from a distributional perspective is employed. The author applies this methodology in an original manner by estimating the progressivity of *a particular facet* of personal taxation (i.e. the favouritism towards homeowner occupiers). A special feature of this particular method enables the researcher to establish the overall progressivity of the entire tax systems. A full discussion of these techniques is provided in Section 4.6.2.

The combination of horizontal and vertical equity measurement techniques employed within this study forms a synthesis of methodologies that has not been done before.

1.3. The research objectives

The first objective of this research is to establish and quantify the classically defined horizontal inequities in the existing two tax systems studied. This is done with reference to alternative investment benchmarks (i.e. the alternative investor and the tenant / landlord) through representative agent micro-simulations. The results on the horizontal equity analyses are found within Chapter 5 (An evaluation of horizontal equity).

The second research objective is to measure the progressivity of the two tax systems as it pertains to the case families established within the respective micro-simulations. The measurement of the progressivity of the four specific tax policies involves both structural and distributional methods, enhancing the evaluation of vertical equity. In addition to the specific tax progressivity measures, the overall progressivity of the

two tax systems is established using a method developed by Suits (1977). The researcher intends to use the same methodology with the three structural indices to ascertain whether or not this method is transferable. The results on the vertical equity analyses are found within Chapter 6 (An evaluation of vertical equity).

The third research objective considers the tax equity implications of modifying the existing tax systems for three increasing levels of neutrality. Evaluations and comparisons are made at each stage, where the original simulation results are measured against the modified benchmarks. The first stage removes the mortgage interest reliefs from the existing tax systems. The second stage includes net imputed rental income into the respective income tax bases. The third stage includes capital gains taxation. This technique enables the researcher to decompose the overall tax subsidies established in the previous chapters into component parts. The results from these analyses are provided in Chapter 7 (Equity evaluation from increased neutrality and a decomposition of subsidies).

The fourth objective of this research considers the changes in horizontal and vertical equity over the twenty-year periods of study. The effects of policy reforms and structural modifications are highlighted and the impact of these changes on the overall tax obligations is considered through a modified methodology involving five-year rolling periods of study. The results from these analyses are provided in Chapter 8 (Trend Analysis).

Finally, what appears to be lacking in the literature is an extensive comparative analysis of the specific owner-occupied housing tax policies and their interrelationship with respect to the complex overall tax systems in which they are present. The overall objective of this research is to contribute to the middle/high range of comparative analytical work. With this goal in mind, the research is set within a comprehensive theoretical framework and systematically compares two countries' specific tax policies and their overall impact on the respective personal tax systems. The methodology used is consistent between the two countries, ensuring a robust dual-nation comparison. Throughout the four results chapters (Chapters 5-8), comparisons, contrasts and conclusions follow each sub-section of analysis, in addition to the final comparative conclusions at the end of each chapter and within Chapter 9 (Conclusion).

1.4. The micro-simulation tool

The micro-simulation models produced within this research may be used in future research. They may simply be extended with regard to the time frame and/or be adjusted with reference to established parameters to further the equity evaluation of homeowner occupier taxation in the UK and US. The models are also adaptable to consider other tax equity issues in either or both countries. Examples may include the equity evaluation of the taxation of employment and self-employment income, the favourable tax treatment of certain retirement instruments, alternative tax units, consumption versus income taxation, etc.

Working models have been established from which future research may accurately identify and quantify horizontal and vertical inequities. Within these models, horizontal equity may be evaluated under its classical definition and the vertical equity evaluation considers both structural and distributional progressivity measures. The detailed analyses of both horizontal and vertical equity from simulated data, coupled with the structural and distributional vertical equity analyses, form a synthesis that has not been achieved before and provide a basis on which to inform policy.

Chapter 2: Literature review

Owner occupied housing taxation has been and continues to be a subject for political and academic debate. The underlying reason for the discourse is due to a clash of two deeply rooted tax theories: the optimal tax theory and the Pigouvian theory of externalities. According to the optimal tax theory, required taxes should minimize economic distortions for efficiency and equity. However, if certain activities or investments produce social economic benefits (positive externalities), favouritism in a tax system is justified provided it encourages such activities or investments. As these two theories appear to be irreconcilable, conflicting arguments persist.

The issues that arise when relying on Pigouvian tax policies is whether the positive externalities are valid and whether the favourable tax policies achieve the intended purpose of encouragement. There is significant literature on what the positive externalities are with regard to homeownership that will be discussed in section 2.1.1. However, many of these benefits have been challenged in other research and there is a growing literature on the associated negative externalities, which will then be discussed in section 2.1.2. The literature on the efficiency of certain tax policies that have been justified by supposed positive externalities is discussed in section 2.1.3.

Consideration of Pigouvian taxation first is necessary in order to accept this form of taxation in lieu of optimal taxation or to reject it in favour of optimal taxation. For reasons that will become apparent in the following sections, the Pigouvian foundation is rejected and it is the optimal tax theory that underpins this research. The optimal tax theory and its associated principles are thoroughly discussed in Section 2.2. Once the conceptual framework is established, the relevant literature on owner-occupied housing taxation is reviewed in section 2.3.

2.1. Pigouvian tax theory

Arthur Pigou, an English economist, was the first to suggest that the tax system could be used to affect desirable behaviour. He suggested taxing certain activities and consumables that had negative social impacts like pollution, cigarettes, alcohol, etc. Alternatively, he suggested governments should consider subsidizing activities

and investments that positively impact society to encourage such activities and investments.

In the *Economics of Welfare* (2002; originally published in 1952), Pigou speaks of divergences between private and social net product. The social net product is with further reference to economists' notion of the national dividend: "the objective income of the community... which can be measured in money (p31)." The author argues that private causes that increase or diminish the national dividend (i.e. divergences) can be affected by bounties (i.e. subsidies) or taxes:

It is, however, possible for the State, if it so chooses, to remove the divergence in any field by "extraordinary encouragements" or "extraordinary restraints" upon investments in that field (Pigou 2002, p192).

The divergence between the private and social net products occurs when:

...one person A, in the course of rendering some service, for which payment is made, to a second person B, incidentally also renders services or disservices to other persons (not producers of like services), of such a sort that payment cannot be extracted from the benefitted parties or compensation enforced on behalf of the injured parties (Pigou 2002, p83).

It has been argued for decades that homeownership offers the kind of positive externalities Pigou envisaged, while not specifically referred to in his text.¹ The following section considers this literature. The beneficiaries (i.e. Pigou's "other persons") include the family, local community and society as a whole. Policy makers on both sides of the Atlantic have used this line of economic theory to justify implicit and explicit favouritism towards homeowner occupiers within tax systems.

2.1.1. Positive externalities from homeownership

Housing incentives, relief, and assistance are offered in a variety of forms from a variety of sources, from local legislators to federal governments. Policies and programmes encouraging homeownership have been justified by the inherent beliefs

¹ The positive externality example provided by Pigou included the lighthouse, investments in private parks in cities, resources devoted to forest conservation, resources invested in residential front door lighting because of the spill over of light onto the streets (Pigou 2002, p184).

that individuals, families, local communities, and society as a whole benefit from the associated externalities.

Positive externalities with respect to the individual

Homeownership may positively impact the homeowner's personal and/or residential satisfaction given the social and economic benefits often attributed to it. Further, homeownership is thought to provide a greater sense of psychological, residential, and economic control for the respective individual and family.

Self-esteem enhancements from homeownership

Rohe and Stegman (1994) and Rohe *et al* (2002) wrote about the positive effect of homeownership on self-esteem². Self-esteem is influenced by how an individual is viewed by others and by the personal view of the individual as compared with others. As homeownership may be representative of social status (Cooper, 1972, Doling and Stafford, 1989, Dreier, 1982, Perin, 1977, Rohe and Stegman, 1994), where others afford the homeowner a higher status and/or if the individual feels they are doing better than those around them, self-esteem should be positively impacted. Self-esteem is also affected by the self-assessment of personal actions and the respective outcomes. As homeownership is a common lifetime goal in many societies, its realisation should naturally be of significant satisfaction thus boosting self-esteem.

The initial transition from tenant to homeowner, subsequent moves to larger or more desirable homes or locations, and personal home modifications (improvements) may be viewed externally and internally as individual achievements potentially raising the self-esteem of homeowners.

² Based on Rosenberg's (1979) three principles of self-esteem assessment, Rohe and Stegman (1994) suggested three mechanisms by which homeownership can contribute to one's self esteem: reflected appraisals, social comparison and self-attribution (Rohe and Stegman 1994, p2).

Enhanced perceptions of “control” from homeownership

The enhanced perception of control through homeownership is recognised in the literature as another individual benefit. This may be considered from psychological, residential, and economic perspectives.

With respect to the psyche, the homeowner has the ability to control by invitation who and when others may enter the home. A tenant does not possess the same “ability to exclude” as they must allow access to the landlord and others the landlord deems reasonable or necessary.

From a residential perspective, the homeowner has far greater freedom with regard to home modifications and improvements that potentially enhances self-esteem and the perception of control. Further, the homeowner is seen to have greater control in tenure in that, so long as the mortgage financing is satisfied, eviction is unlikely. Tenants’ rights to reside are negotiated through short or long-term leases that will inevitably contain termination clauses for both parties.

And finally, with respect to economic control, homeownership ensures protection against uncertain housing costs in the future as evidenced by the significant housing appreciation many countries experienced over the past few decades. Also, homeowners may eventually realise the benefit of the home’s equity, either through reduced future housing costs or equity withdrawal as and when needed. The wealth accumulation can be a realisable source providing economic comfort later in life, when earnings may be naturally reduced or limited. Besides the residential security the home offers an aging family, the ability to tap into the accumulated wealth can ensure other needs are adequately met (i.e. basic necessities including food, health care, living assistance, etc.).

Social integration facilitated by homeownership

The homeowner may be more socially integrated through higher levels of involvement in local organisations and associations. Such social networking may serve to strengthen the homeowner’s relationships with neighbours and the local community and positively impact self-esteem. The neighbours, organisations, and

associations may also benefit from *positive* involvement, which will be considered in a subsequent section on local community and societal benefits.

Physical and mental health enhanced by homeownership

It has been argued that the physical and mental health of the homeowner is improved through greater self-esteem, greater perceptions of control, and a greater level of social integration. Rossi and Weber (1996) support these arguments with their analysis of questionnaire data.

...[home]owners are higher than renters in self-satisfaction, are more likely to believe they can do things as well as anyone else, are more sure that their lives will work out as they want, score lower on a scale of depression, show higher levels of happiness with life in general, and rate themselves higher in physical health (1996, p13-14).

Positive externalities with respect to the family

Children of homeowners are believed to be better-behaved and higher achievers with respect to education, which in turn positively impacts their future prospects including home acquisition. The positive correlation between homeownership and scholastic achievement is theorised to result from the residential stability of homeowners as they tend towards longer tenure.

Hanushek *et al* (1999) found a strong negative impact on school achievement with respect to residential or school moves, particularly at lower levels of family income and in schools with higher levels of turnover. Their investigation focused on the short and long run implications of different types of moves (i.e. urban to suburban or rural and vice versa), with particular attention to race, ethnicity and income characteristics. This research differed from similar studies in that it had access to a significantly larger sample through the use of Texas Schools Microdata Panel in which 5 cohorts (each with approximately 200,000 students in over 3,000 public schools) were considered (Hanushek *et al*, 1999). An interesting finding, given the large sample, was the differences in mobility effects among the different ages. The authors were able to surmise that children in Grades 5 and 6 were particularly

adversely affected by moving. Subsequent work done by Aaronson (2000) supported these findings.

Aaronson (2000) used the Panel Study of Income Dynamics (PSID) and its accompanying geocode database in his research regarding homeownership externalities. He concluded that the homeownership effect is “fairly robust in a simple regression framework”, but qualifies this statement with the consideration for “other difficult-to-measure family characteristics” (Aaronson 2000, p358). His research complements the research of Hanushek et al. (1999) documenting achievement losses in younger children from changing schools (Aaronson, 2000).

Green and White (1997) contributed to the literature on homeownership benefits with their findings being that the children of homeowners were less likely to drop out of secondary (high) school education before finishing and less likely to fall pregnant in the teen years. Three different data sets were used in this research: the PSID, the Public Use Microsample of the 1980 Census of Population and Housing, and High School and Beyond. Green and White focused on 17- and 18-year-old youths “because they have been exposed to the maximum amount of parental influence” (Green and White 1997, p444). The authors conclude by recognising the positive impact homeownership has on youth, particularly in low-income households, which may justify government subsidies. However, they go on to say the current US tax system is “misguided, because it mainly benefits higher income households who would own homes regardless” (Green and White 1997, p458).

Haurin *et al* (2002) found a strong and significant impact on cognitive and behavioural outcomes of children with respect to homeownership. Their research differed from Green and White and Aaronson in that their focus was on young children rather than older teens and the breadth of their control variable were greater. The data set used in this research was the National Longitudinal Survey of Youth, with a sample of 1,000 children, ages five to eight. The methodology used was a “random effects econometrics model to estimate the impact of homeownership on the quality of the home environment and the impact of home environment and homeownership on child outcomes” (Haurin *et al* 2000, p2). The authors conclude in support of a more focussed allocation of subsidies with respect to the rental population with children.

Positive externalities with respect to local communities and society

Rossi and Weber (1996) found in their analysis that the homeowners 'are almost consistently more engaged in local politics than renters are'.

The coefficients show higher levels of owners serving on group committees, attending group conferences, serving as group officers and donating funds beyond membership dues. Clearly owners are more likely to be involved in community improvement activities (Rossi and Weber 1996, p23).

The theories underpinning greater community involvement (i.e. desire to improve the local community) are twofold. Firstly, the homeowner has a greater financial investment in the home that is directly affected by the quality of the local community. Improvements in the neighbourhood and local community are *internalised* by the homeowner should the home become more desirable and therefore valuable. In other words, 'community quality is capitalised' into the value of the home (DiPasquale and Glaeser, 1999, p355). Secondly, the homeowner's mobility is impaired by higher transaction costs as compared with the tenant. It therefore behoves the homeowner to take greater care and interest in the local community, as they will consume the benefits of improvements over a longer period of time (DiPasquale and Glaeser, 1999, p355). In contrast, the tenant does not accrue a benefit of monetary value as this would accrue to the landlord. And while similarly enjoying the consumption of benefits, their residency is likely to be for a shorter period of time.

It is therefore argued that homeowners make better citizens. This is an extension of the premise that homeowners are more involved in the local communities and politics. Homeowners tend to vote more often and regularly (DiPasquale and Glaeser 1999).

2.1.2. Negative externalities from homeownership

While homeownership undoubtedly confers real benefits, they are not universally realised or equally distributed. This section critically evaluates the theories and research on the positive externalities commonly associated with homeownership.

Each sub-section of the previous section on positive externalities is critically evaluated. In addition, other social costs are briefly considered.

Negative externalities with respect to the individual

The policies and programmes introduced over the last half century promoting homeownership have successfully increased the level of investment in many countries. The housing market is no longer reserved for the middle and upper classes. On the contrary, and by explicit intention, it has become much more diversified³. It is believed that by successfully moving homeownership down the income scale, the social and economic benefits once available only at higher income levels would now be enjoyed by those of more modest means. Decades of stable economies and rising housing markets fuelled this premise.

Self-esteem detriments from homeownership

Homeownership is not always a positive experience and may indeed have a negative impact on self-esteem. Considering Rohe and Stegman's mechanisms again, if the individual's self-esteem is affected by how others view them and how they compare themselves with others, where individuals' peers reside in superior homes and locations, the impact may indeed be a lowering in self-esteem. If the individual is unable to maintain or improve the home as they desire, or if they are unable to sustain the mortgage commitment due to changes in circumstances, self-esteem will have been compromised by the third mechanism, self-assessment. The presumption of only positive impacts on self-esteem from homeownership is tenuous. While this may be more of an issue for lower income families, no socio-economic group is immune from a potential slip in status or circumstances. In today's economic climate, the life styles of many will be reconsidered and family homes may indeed need to be downsized.

Diminished perceptions of "control" from homeownership

It is undeniable that the homeowner has a greater ability to exclude, greater freedoms of expression and a greater stability in tenure. That said, in certain situations the homeowner may not have greater economic control when compared to the tenant.

³ Doling and Stafford (1989), *Home Ownership: The Diversity of Experience*.

Less economic control may be attributed to the homeowner in the early years, particularly in a falling market where negative equity is a very real concern for many.

Higher transaction costs may be a significant underlying factor contributing to longer tenures commonly associated with homeownership. More severely, a significant drop in capital value may discourage some homeowners from moving and realising a potential loss on their investment. This impediment in mobility may potentially trap some in deteriorating neighbourhoods and this would be largely beyond the control of the homeowner.

Physical and mental health compromises by homeownership

If homeownership were indeed a less stressful tenure with respect to residential and economic security, then one would expect to see a positive correlation between homeownership and good health. However, for some it may prove to be more stressful to own and maintain a home, particularly in today's global recession with falling housing markets. The worries of impeded mobility, home maintenance and family finances may indeed increase stress levels and potentially compromise the homeowner's health.

Negative externalities with respect to the family

There is undoubtedly a positive correlation between homeownership and the length of tenure, and between child rearing and the length of tenure. Therefore, as parents may deem it necessary to provide residential stability for children, they are more likely to become homeowners. Aaronson (2000) critically analysed the data provided and conclusions drawn by Green and White on the grounds of omitted variable bias. Other very relevant factors that may differ among homeowners and renters are 'parenting skills, interest in the educational process, wealth, and family stability' (Aaronson 2000, p356). Causality is considered with reference to greater community involvement as a result of the relatively greater financial stake of the homeowner and the family residential stability (longer tenures). While homeownership may indeed positively impact children's scholastic achievement, the costs have not been adequately evaluated. The financial commitment of homeownership is significant, particularly in early years, which often coincide with

child rearing. Arguably, it is at this time that finances will be diverted from more specific family investment that may have an even greater impact on children's outcomes (i.e. private school and/or university education).

“When married...homeownership (demonstrates) a stronger commitment to marriage and children” (Rossi and Webber 1996, p17). However, the authors did not find great differences between owners and renters on marriage and family behaviour and issues in their analysis. In fact, on the contrary, homeowners were found to disagree with spouses in more areas, have less sex (with their spouses), and cope less well with parenting in comparison with the tenants surveyed. Homeowners may find their personal time compromised by the care and maintenance requirements of their personal residence. Rossi and Weber (1996) found that greater time was spent on chores around the home. It has been argued that, in general, homeowners enjoy a certain degree of satisfaction in home and garden care and maintenance but this may be highly contested by some. Finally, the financial stress that may be experienced from the initial transaction costs and early years of ownership potentially strain family relationships.

Negative externalities with respect to local communities and society

Homeownership may have significant societal costs including aggravated unemployment, greater stresses on the environment, misappropriation of capital investment, and economic shocks.

Impeded mobility resulting from homeownership has already been briefly discussed. Such an impediment may make it difficult for individuals to secure or retain employment. Further, if relative employment options are limited in the commutable area, homeowners in particular may be reluctant to improve/optimize their circumstances through change. The status quo that pays the mortgage may be all that is desired. Oswald (1997) and Green and Hendershott (2001) established a positive correlation between unemployment and homeownership in their research.

The strain on resources is greater for single-family homes for a number of reasons. Firstly, it takes more electricity and/or gas to power, heat and cool a respectively larger accommodation. The increased demand for single-family homes can be directly linked to urban sprawl. Also, homeowners may be more willing to commute

further distances for employment for the maintenance of a home in a more desirable location. There has been relatively little research to date on the environmental costs of homeownership.

Hancock and Munro (1992) considered the misappropriation of capital investment and urban sprawl in their paper on housing subsidies. This was preceded by Muth (1985) and Voith (2002) who also acknowledge the adverse impact fiscally encouraged homeownership has had on land consumption with specific reference to urban sprawl. Gervais (2002) also recognised the distortion in capital markets caused by favourable fiscal treatment of homeowners. He acknowledged the premature investment of first-time buyers and the over-consumption of existing homeowners as a result.

Last and by no means least, the unsustainable debt assumed by many individuals resulting in the US sub-prime mortgage crisis triggering the current worldwide financial crisis must be acknowledged as being encouraged by the well-meaning policy makers, politicians, and financial advisers as well as the more unscrupulous money lenders. Since WWII consecutive governments on both sides of the Atlantic have promoted homeownership, at times and in certain countries more aggressively and more effectively than others.

With homeownership rate reaching 70 per cent in the 1990s, politicians from both parties boasted about the American 'ownership society' as the cornerstone of the country's economic stability and the need to extend the inalienable right to the pursuit of the 'American dream' to the excluded 30 per cent (Sharma 2009, p178).

The bipartisan push within the US government to promote homeownership for all 'led to the implementation of a series of perverse laws and regulations', which resulted in the weakening of the traditional mortgage-lending standards. This root cause of the crisis can be traced back to 1977, when Congress passed the Community Reinvestment Act (CRA), which discouraged the 'exclusionary redlining' practice of the banks and savings and loan associations. The initial intention was to encourage financial institutions to extend credit to individuals who would not normally qualify.

By 1995, this was stepped up to penalising institutions if they did not extend more loans to poor neighbourhoods (Sharma, 2009).

Ironically, a practice born out of the US savings & loan (S&L) crisis of the 1980s known as ‘originate and distribute’ was the catalyst for the sub-prime mortgage crisis as it allowed the mortgage-lenders to divest themselves of risks associated with holding the mortgages themselves. Securitisation allowed the banks and savings and loan associations to sell their loans and use the receipts to originate more mortgages. The two major government-sponsored enterprises, Fannie Mae and Freddie Mac, were key in the development of the mortgage-backed securities (MBS) market, which gained momentum in the 1990s. Investors worldwide could have a piece of the US real estate market on offer by the investment banks, thus redistributing the risks once more (Michelis, 2009).

It all ended in a global credit crisis when the bubble created in the US housing market finally burst in the later part of 2007. This bubble was the result of the easy access to credit, the demand for MBSs, and the significant change in the capital gains tax regime, which exempted most homes from taxation.

It is worth noting that the previous financial crisis, the S&L crisis, was also the result of the US government’s promotion of homeownership stemming back to 1930s legislation.

2.1.3. The efficiency of certain tax policies

Whether or not the legitimacy and prevalence of positive externalities is accepted, the efficiency of certain favourable tax policies must be questioned. Surrey and McDaniel (1985) recognised two efficiency aspects in his work on the *tax expenditure concept*⁴. First, does the expenditure “achieve its actual objectives”? Second, do the benefits of the expenditure exceed the costs? Inefficiencies stem from various causes including ill-targeted provision, costs well in excess of gains and the incidence of benefits falling elsewhere (Surrey and McDaniel 1985, p82). Since Surrey and McDaniel’s seminal work on the tax expenditure concept, housing tax

⁴ The tax expenditure concept is discussed in Section 2.3 (Assessing Owner-occupied Housing Policies.)

expenditures in particular have received significant attention among policymakers and academics. Wood (1990), among many others, recognised that:

... housing tax expenditures are an inefficient policy measure in encouraging growth in home-ownership, as they fail to target those low-income groups with an underlying preference for home-ownership, but lacking the ability to meet ownership and acquisition costs (Wood 1990, p820).

The US home mortgage interest deduction is well worth examining in this light, given the existing literature. US taxpayers with substantial allowable personal deductions may benefit from itemizing their deductions in lieu of claiming the available standard deduction. Mortgage interest is often the largest most common allowable deduction next to state and local income taxes. Its allowance has been defended for decades on the grounds of the supposed positive externalities associated with homeownership. However, it is well recognised as a poor fiscal instrument to encourage new investment in owner-occupied housing as it has increasingly become only relevant to the wealthy, who tend to be homeowners anyway. Glaeser and Shapiro (2003) examined this issue in a time series analysis where they established the significant change in the deduction since 1965 relative to the standard deduction with little change in the level of homeownership. Follain, Ling and McGill (1993) also recognised the worthlessness of the mortgage interest deduction to low- and moderate-income households in their research. Poterba and Sinai (2008) recognised this in their research where 98% of their sample with incomes in excess of \$125,000 itemized, whereas only 23% of those with incomes below \$40,000 itemized. They found the distribution of the mortgage interest relief to be vertically inequitable in that the higher income earners had greater mortgages, higher marginal tax rates and therefore larger deductions.

A review of the tax expenditure data produced by the Joint Committee on Taxation⁵ clearly depicts the distributional inequity of the mortgage interest deduction. In 1993, those with incomes in excess of \$50,000 claimed 85% of the tax savings. This

⁵ The Joint Committee on Taxation is a nonpartisan committee of the US Congress made up of economists, attorneys and accountants. Their role is to act as an advisory committee to the majority and minority parties in both houses of Congress on taxation (<http://www.jct.gov>).

has increased to 90% in 1995, 93% in 2000 and 96% in 2006. The details of the distribution for 1993 and 2006 are provided in Table 2.1.

**Table 2.1 Distribution of tax expenditure (US mortgage interest deduction)
by income class for 1993 and 2006**

<u>Adjusted Gross Income Class</u>	<u>Amount of Tax Expenditure</u>		<u>Share of Tax Expenditure</u>	
	<u>(in millions of dollars)</u>			
	<u>1993</u>	<u>2006</u>	<u>1993</u>	<u>2006</u>
Below \$10,000	5	1	0.0%	0.0%
\$10,000 to \$20,000	164	65	0.4%	0.1%
\$20,000 to \$30,000	797	330	1.9%	0.5%
\$30,000 to \$40,000	1,888	814	4.5%	1.2%
\$40,000 to \$50,000	3,232	1,523	7.8%	2.3%
\$50,000 to \$75,000	10,955	6,827	26.3%	10.4%
\$75,000 to \$100,000	8,774	8,360	21.1%	12.8%
\$100,000 to \$200,000	11,401	27,936	27.4%	42.6%
\$200,000 and over	4,436	19,663	10.7%	30.0%
Totals	41,652	65,519	100.0%	100.0%

Source: JCT (1994)⁶ and (2007)⁷ and own calculations

Litzenberger and Sosin (1978) concluded that the removal of the US mortgage interest deduction may affect the incidence of homeownership in the middle range and that it would not affect the lower or higher income groups. They considered the substitution of a credit that has been acknowledged as more effective by many⁸, and concluded that the incidence would increase at the lower income level. Other literature on the inefficiency of the US mortgage interest deduction includes Rosen (1989), Bourassa and Grigsby (2000), and Berkovec and Fullerton (1992). The consensus being that it does not achieve its explicit intention of encouraging homeownership.

⁶ Available at: <http://www.jct.gov/publications.html?func=startdown&id=1210>

⁷ Available at: <http://www.jct.gov/publications.html?func=startdown&id=1198>

⁸ Literature advocating a tax credit as opposed to a tax deduction for mortgage interest includes Litzenberger and Sosin (1978), Green and Vandell (1999) Bourassa and Yin (2008), Toder *et al* (2010), Hilber and Turner (2010) and Pozen (2011), among others.

2.1.4. Concluding comments on Pigouvian tax theory

In conclusion, if the existence of positive externalities is tenuous, or if one accepts that there are some positives and some negatives without concluding where the balance rests, and if it is apparent that certain favourable policies are not instrumental in encouraging investment, then how can they continue to be justified? The scenario is reminiscent of the house (or more to the point, housing tax policies) being built on sand. If a firmer foundation is required, surely the theory on optimal taxation prevails. It is for these reasons that this research is underpinned by the optimal tax theory.

The next section establishes the conceptual framework in which this research is set. The optimal tax theory and its associated concepts and principles are examined herein with reference to relevant literature. Included within this section is a thorough discussion of horizontal and vertical tax equity, the two aspects of owner-occupied housing taxation under consideration in this research.

2.2. Optimal tax theory and tax equity

The two most often cited criteria used to critique tax policies are *equity* and *economic efficiency*. Equity refers to the fairness of the tax policy or system, which may be evaluated from horizontal and vertical perspectives. Economic efficiency is the ability to collect the desired or required revenue with minimal associated costs and distorting effects on behaviour (i.e. the principle of neutrality). These desirable characteristics recognised by Adam Smith (1999/1776), have remained constant yardsticks to which existing tax systems, specific policies, and proposed reforms have been measured. These two canons form the basis of *optimal taxation theory*.

Ramsey posed the optimal tax problem in 1927. All taxes possess behavioural distortions and therefore create excess tax burdens. A governmental objective should be to impose neutral taxes with the aim to minimise those excess tax burdens unless affecting behaviour is the underlying objective as discussed in the previous section. Simply stated, optimal taxation raises the required revenue for public expenditure with a minimal associated excess tax burden.

While this point of view is from the economic efficiency maxim, consideration of the equity of tax systems is present in the literature on optimal taxation. Indeed, these two principles are not mutually exclusive, and economic efficiency with respect to neutrality and the associated potential distortions bear directly on *horizontal equity*⁹ (the reverse is also true). In point of fact, it is assumed that greater neutrality is generally consistent with better horizontal equity (Van Den Noord 2001, p29). While the simplest models on optimal taxation have the sole objective of minimizing efficiency costs, the more sophisticated models also consider how the distribution of welfare (equity) is affected (Slemrod 1990).

The optimal taxation of owner-occupied housing as stated by the OECD is to tax an imputed rental income (net of expenses including a mortgage interest deduction) and the realised capital gain (OECD 2001, p177). This view of optimal taxation is with reference to the neutrality principle stemming from the principle of economic efficiency, but it implies equity as well. If a tax system favours the consumption or investment of one over another, it creates distortions because it is not neutral and is therefore inequitable towards one set of taxpayers who choose (or are stuck with) the alternative product or investment. To tax the net imputed rental income is to be *tenure neutral*¹⁰, ensuring tax equity exists between homeowners, landlords and tenants. To tax the capital gains realised is to be *investment neutral*¹¹, ensuring tax equity exists between homeowners and alternative investors. The OECD's position on owner-occupied housing is therefore grounded in the principles of economic efficiency and horizontal equity.

Besides the efficiency and equity underpinnings, the OECD's position on homeownership is consistent with the comprehensive income tax (CIT) theory.¹² A well-recognised premise of the CIT according to Haig (1921) and Simons (1938) is the taxation of the implicit rental income realised by owners of real property. The exclusion of such income significantly benefits those with greater financial means by introducing a "bias inconsistent with the system of progression" (Simons 1938, p114). Further, the gains realised on property transactions are also subject to taxation under the CIT.

⁹ The concept of horizontal equity will be discussed in Section 2.2.3 (*Horizontal equity (HE)*).

¹⁰ Tenure neutrality is discussed fully in Section 2.3.3 (*A tenure neutral benchmark*).

¹¹ Investment (tax) neutrality is discussed fully in Section 2.3.3 (*A tax neutral benchmark*).

¹² The theory of comprehensive income tax will be discussed in Section 2.2.1 (*ability-to-pay*).

With regard to *vertical equity*¹³, optimal tax theory suggests that an equitable tax “guarantees a socially desirable distribution of the tax burden” (Rosen 2005, p344-5). This refers to the progressivity of the tax structure. Concentration on vertical equity can adversely affect efficiency and vice versa. Where there is conflict between the principles, focus is commonly on the integration of efficiency and equity and the often present need for a trade-off between the two. In other words, while neutrality and horizontal equity may be achieved together, vertical equity (or progressivity) will often compromise or be compromised in the process. Musgrave (1959) suggested that horizontal and vertical equity might be considered to be opposite sides of the same coin (p160). In other words, while both ideals have a place in structuring and restructuring tax policies, they may be viewed as opposing forces. Meng and Gillespie (1986) identify horizontal and vertical equity as “distinct though related objects of a good tax system (p226).

The tendency of theorists, politicians, and economists has been to focus on efficiency concerns and economic growth over equity for the last two generations. For that reason there has been a plethora of literature on the efficiency aspects of owner-occupied housing taxation and far less on its equity. This research is a unique contribution¹⁴ to the limited existing research into tax equity of owner-occupied housing in the UK and the US.

Primacy of equity

In spite of the literature’s spotlight being on efficiency in the latter half of last century, the primacy of equity in taxation has been recognised and argued (Simons, 1938; Rawls, 1971; Green, 1993; Streuerle, 2002 and Thorndike and Ventry, 2002, among others).

The first and most essential purpose of taxation is to share the burden of the state fairly among all individuals and families. Unless the allocation of the burden is generally accepted as fair, the social and political fabric of a

¹³ The concept of vertical equity will be discussed in Section 2.2.1 (*Progressivity and vertical equity (VE)*).

¹⁴ Its distinct contribution is established in its methodology, which will be set out in Chapter 4.

country is weakened and can be destroyed... scrupulous fairness in taxation must override all other objectives where there is conflict among objectives (Canada's Royal Commission on Taxation, 1966, p4).

Green (1993) acknowledged not only the “dominant and structuring virtue” of tax equity (i.e. the “role of justice”), but also “the more humble reasons” for giving it priority in tax reform. Quite simply, a tax system requires a high level of voluntary compliance and that may be compromised if the system is perceived to be unfair.

The Community Charge (Poll Tax) introduced in 1990 in the UK is an example of an efficient tax that failed because of the lack of public acceptance on equity grounds. The French Revolution and the Boston Tea Party are other examples of the power of the public dissatisfaction with taxation in history. While riots and revolutions are extreme examples, they clearly illustrate that however efficient a tax policy may be in theory, if it is perceived as unfair, widespread tax avoidance and evasion may lead to its downfall.

Stigler (1976), Samuelson (1966) and many other economists have sidestepped equity with the assertion that they “have no special competence in determining which distribution of resources is appropriate” (Heckman, 1997). Stigler wrote, “since we get our notions of equity from the community, we can hardly play a large role in the community’s choice of policies with respect to income distributions” (Stigler, 1976).

Over the past fifty years, economists have increasingly held that a theory in just or equitable distribution is not within the purview of economics but should be left to philosophers, poets and politicians (Musgrave 1989, p74).

Despite the many sources of complexity, equity principles are the first standard against which policy is assessed and judged (Streuerle, 2002). While economists have focused on the efficiency aspects of taxation in recent years, leaving equity discussions to tax theorists and philosophers, the primacy of equity is evident.

Equity will always reassert its rightful place as the first and most basic set of principles applied to constitutions and laws (Streuerle, 2002).

While ‘optimal taxation’ may continue to subordinate equity to efficiency in economic literature, history has shown the general public’s view of ‘optimal taxation’ places equity before efficiency.

The remainder of this chapter considers the underpinning concepts and principles relevant to evaluating the tax equity of owner-occupied housing in accordance with optimal taxation. First, tax equity in principle and as a working concept is established with due consideration for the literature. Second, the literature on neutrality and tax incidence specific to owner-occupation is discussed. Finally, once the basic conceptual framework is established, the remainder of the chapter is a review of the literature specific to owner-occupied housing taxation.

2.2.1. Equity in Taxation

Equity in taxation refers to a *just* or *fair* distribution of the tax burden. The distribution is with and without regard for the pre-tax distribution of income, wealth and/or welfare. With regard to the pre-tax situation, an equitable distribution considers correcting pre-existing inequities through the *redistribution* of tax benefits. When the pre-tax situation is not regarded, the tax burden is distributed equally, leaving any pre-existing inequities unchanged. The acceptance of a tax system as a means of redistribution depends on society’s tolerance of its inherent inequalities.

Equity has a long history in the law and public finance literature. Before equity is discussed in principle and as a working concept, an appreciation for the various philosophical frameworks of distributive justice is warranted. This is because such frameworks bear directly on the various aspects of tax equity, particularly the vertical fairness of taxation (i.e. progressivity). The widely recognised primary criteria for determining distributive justice are libertarianism (endowment-based), utilitarianism (welfare economics), and egalitarianism. In addition to these traditional philosophical platforms, feminism is discussed as an alternative vision of distributive fairness. This is not an exhaustive analysis of the various frameworks on distributive justice, but grounding for the concept of tax equity that will then ensue.

Libertarianism (endowment-based or entitlement) criteria

Locke (1924/1690) recognised the individual's right to the 'fruits of (his own) labour'. This was referred to as the 'natural' distribution with which the state had no right to interfere. Locke's "entitlement right" is limited with a proviso stipulated by him: appropriation of property is acceptable only if another individual is not disadvantaged by the appropriation. In other words, one may appropriate a particular good or service, so long as there is enough of that good or service left for others.

Nozick (1974) is a more recent advocate of entitlement theory. The Nozickean theory recognises only two instances in which the state has claim over an individual's property. First, there must be a mandatory contribution towards expenses providing a minimal state. Second, improperly acquired property (i.e. stolen) may be appropriated by the state. This second instance is referred to as the "principle of rectification". Recognising that Locke's proviso was established in a time of seemingly limitless resources, Nozick updated the proviso to allow for the appropriation of goods and services by any individual, even if such goods and services are completely depleted as a result of such appropriation, so long as other individuals are able to improve their situations in other ways.

Redistribution of income within a tax system is prohibited under these libertarian theories, given its contradiction to the entitlement premise, unless the 'rectification' of improperly acquired property is deemed necessary.

Utilitarianism and welfare economics

Utilitarian theorists rejected the endowment-based premise that the innate inequality in ability and opportunity is justification for the inequality in income distribution. They sought to establish another basis for distribution on the grounds of justice.

Utilitarianism holds that the moral worth of an action is judged by its effect in promoting happiness. Happiness was defined by Henry Sidgwick as "the surplus of pleasure over pain" (Sidgwick 1907, p413). This is a normative theory quite separate from welfare economics although frequently confused. Pure utilitarianism considers the happiness of all, including animals and the unborn. There has been a

blurred crossover from utilitarian philosophy into welfare economics. Part of the confusion is due to the fact that prominent utilitarian theorists, who were also prominent economists, established welfare economics. The blur is reinforced by the economic term “utility” which is generally synonymous with welfare and the utilitarian concept of happiness (Posner, 1979).

The ideal in welfare economics is the promotion of the greatest welfare (i.e. happiness) for the greatest number. This was first reflected in the work of Jeremy Bentham (2000/1781) who called for an equal distribution in order to maximise the welfare of the collective. Bentham’s *greatest happiness principle* recognises the predominance of “pleasure” over “pain”.

While the ideal appears straightforward, the application is less so. Assumptions of individual measures of utility are necessary (i.e. comparability or variability). An assumption of a diminishing marginal utility of income is also required (where the marginal utility of income is defined as the utility, or satisfaction, gained from one extra unit of income). The norm is to assume that units of income are directly correlated with units of utility and that everyone faces the same downward sloping marginal utility function. This norm is reflected in various works including those of Musgrave (1989) and Steuerle (2002).

John Stuart Mill, a student of Jeremy Bentham, furthered welfare economics by establishing the sacrifice theories. The burden of taxation was then thought of as a sacrifice and equity called for equal sacrifices (Mill, 2001/1848). An *equal absolute sacrifice* is achieved when individuals make an equal sacrifice of utility. This was not meant to imply equal tax payments. When a downward sloping marginal utility curve is assumed, greater tax payments are required from those with higher incomes. The end result is to extract greater taxes from wealthier individuals but impose the same costs in terms of utility sacrifices. *Equal proportional sacrifice* is achieved when individuals make equal proportional sacrifices of utility, and this requires even greater tax payments by those with higher incomes. Sidgwick (1883, p562) was an advocate of equal absolute sacrifice whereas Mill (2001, p155) preferred equal proportional sacrifice.

Edgeworth (1910) and Pigou (1928) advanced sacrifice theory in the early part of the 20th century, and advocated the *equal marginal (or least aggregate) sacrifice*. However, taken to the extreme, this theory calls for the levelling of incomes and requires a 100% marginal rate at the top end of the tax spectrum if everyone is assumed to have the same utility function. Given the obvious disincentive effect of such taxation, which was well recognised by Pigou, the efficiency effects of taxation “moved to the forefront of tax analysis and came to be viewed as the central criterion for a system of ‘optimal taxation’” (Diamond and Mirrlees 1971); (Thorndike 2002, p15). Modern utilitarian theorists have moved away from the sacrifice doctrines towards efficiency with the objective of promoting economic growth (i.e. material wealth and market opportunities) to the advantage of all citizens (Staudt 1997, p945-6). There is a great reliance on the “trickle-down” effect of an efficient tax system and market place within this theoretical realm.

Redistribution of income is a necessary function of taxation under the early utilitarian framework with an aim to increase social welfare. The extent of the progressivity is dependent on the assumed steepness of the diminishing marginal utility of income curve. On the contrary, the modern utilitarian theorists taken to the extreme would advocate a regressive tax system for the sake of efficiency.

Egalitarianism

Egalitarianism is a more extreme branch of welfare economics. Whereas the utilitarian theories assign equal weights to individuals’ levels of happiness, egalitarian theories assign different weights, weighting the welfare of the less well off more heavily than the better off individuals. John Rawls’ *Theory of Justice* is considered the “touchstone of modern general theories” (Kornhauser 1996, p623).

Rawls (1971) presents a framework from which a diverse society can reach an agreement about the characteristics of its political system (Byrne 1995, p774). The framework assumes that individuals in all segments of society (i.e. rich and poor) are ignorant of their positions. The ‘veil of ignorance’, from which policy will be decided, arguably ensures the fair treatment of the least well-off members of society. This leads to Rawls’ first principle of justice, referred to as the “original position” principle, in which an equal distribution of basic rights and liberties would result

under this framework. His second principle recognises acceptable differences in distributions and is referred to as the “maximin” or the “difference principle”. In essence, inequalities are acceptable if they somehow improve the situation of the worst off members of society.

All social primary goods – liberty and opportunity, income and wealth, and the bases for self-respect – are to be distributed equally unless an unequal distribution of any or all of these goods is to the advantage of the least favored (Rawls 1971, p303).

Redistribution of income is required under the “Rawlsian leximin”, which is deemed the most egalitarian of the welfarist theories on distributive justice (Bankman and Griffith 1987, p1950).

Feminism

The previous three philosophies possess distinctly masculine voices. According to feminist literature, the male perspective of society is one of inherent selfishness, with an aim to protect individual rights and entitlements (McCloskey, 1983 and Kornhauser, 1987). This is most evident in the libertarian philosophies of Locke and Nozick. The ‘male’ tendency is to establish rights and rules that protect one’s autonomy, as is evident in constitutions and legal systems predominantly (if not entirely) devised by men. The utilitarian’s sacrifice doctrines aim to minimise hurt. The premise for redistribution under this framework, as established by Bentham, Sidgwick, Edgeworth and Pigou, may be seen as ‘reciprocal altruism’. This may also be seen as a distinctly male perspective when the male starting point is assumed to be:

...from the premise of separation but recognising that “you have to live with other people,” he seeks rules to limit interference and thus to minimize hurt. Responsibility in his construction pertains to a limitation of action, a restraint of aggression, guided by the recognition that his actions can have effect on others, just as theirs can interfere with him. Thus rules, by limiting interference, make life in community safe, protecting autonomy through reciprocity, extending the same consideration to others and self (Gilligan 1982, p37-38).

The “veil of ignorance” as established by Rawls is an example of a distinctly male metaphor. Belenky *et al* (1986) and Gilligan (1982) recognised that men tend to use visual metaphors, which may be a way of detaching oneself from the objective view.

However, these attitudes do not necessarily reflect reality. There are too many examples of selfless acts in history to accept that humans are entirely or even predominantly self-serving. There are other philosophies and ways of life that allow for a different perspective of one’s self and one’s position in society. A sense of community is promoted in certain religious, secular and political ideals. While theories may differ, an alternative view of human behaviour contrary to “extreme individualism” has been and continues to be present in society today. Feminism is just one alternative vision.

A female perspective views people and society in terms of interconnections, personal needs and communal obligations. While the male perspective may be to help another out of a sense of reciprocal or nepotistic altruism, the female perspective will be one of willing responsiveness. The male point of view is reactive and may be seen as a defensive act to protect oneself: “we ‘care’ about others so that they will care about us and our rights, so that we may remain our independent selves” (Kornhauser 1987, p509). In contrast, the female point of view is to be receptive to others’ needs and to initiate caring action; it is to be proactive and not merely reactive.

Feminism and related alternative visions call for redistribution under a sense of communal obligation.

While the perspectives¹⁵ have changed over the centuries, it is generally accepted that meaningful measures of tax equity must be grounded in a view of entitlement and distributive justice (Kaplow, 1989 and Musgrave, 1990). Tax equity, as an ideal and measurable concept is entirely dependent on the view assumed.

¹⁵ Musgrave gave a summary of the evolution of the equity principal and its major contributors in his 1990 paper entitled *Horizontal Equity, Once More*. The four possible views according to Musgrave (1990) are entitlement or benefit (Locke, 1924/1690), ability-to-pay (Smith, 1999/1776 and Mill 2001/1848), maximum welfare (Bentham, 2000/1781, Edgeworth, 1897, Pigou, 1928 and Sidgwick, 1874) and the veil construct (Vickrey, 1945, Harsanyi, 1953 and Rawls, 1971) (Musgrave, 1990).

Kornhauser (1987) considered progressive taxation from an alternative perspective, feminism, in contrast to the perspectives of the neoeconomists and neoconservatives who are grounded in entitlement theory.

Specific tax theories

With an appreciation for the theories of distributive justice, the specific theories of taxation may be considered. There are several theories including the benefit theory, sacrifice, optimal taxation, ability-to-pay and the theory of comprehensive income taxation. It is recognised that consideration for one's ability-to-pay is present in the sacrifice doctrines, the theory of optimal taxation and the comprehensive income tax theory. Therefore, these theories will be considered within the confines of the ability-to-pay principle. This is not to suggest that they are subordinate theories, but interlinked with another theory of significant historical grounding.

Two approaches to tax-structure design were recognised by Adam Smith (1999/1776) among others; the benefit principle and the ability-to-pay principle, both of which are addressed in Smith's first canon on equity. The benefit principle simultaneously considers taxation and government expenditure whereas the ability-to-pay focuses only on the taxation side of the budget.

While Smith is often credited as the forefather in tax design, these were not new principles. Petty (1899/1677) wrote, "...men should contribute to the public charge but according to the share and interest they have in the public peace; that is, according to their estates and riches" (Petty 1899, p91). This approach was also discussed in the earlier literature of Locke (1924/1690) and Rousseau (1968/1762). Later literature on the topic includes Bentham (2000/1781) and Mill (2001/1848). The ability-to-pay principle predates the benefit principle by another century. A brief summary¹⁶ of the two principles is provided.

Benefit principle

The benefit principle originated at the time when public services began to be financed through charges levied on individuals deemed to use or enjoy (i.e. benefit from) such services.

*Whether the revenue required was to provide for sea defense, fortifications,
or the maintenance of roads, the customary measure of assessing payment*

¹⁶ Musgrave (1959) provided more extensive summaries of these principles, their attributes and shortcomings in *The Theory of Public Finance*.

was based on those properties whose owners actually received a benefit from the expenditure in terms of protection of property rights or increases in values (McCluskey et al., 1998).

In certain instances, when public services resemble private-sector services, the benefit approach to taxation is feasible. Evidence of this includes the UK television tax imposed on television owners, the license taxation of vehicle drivers in various countries, departure taxes passed on to air-travelers, and the UK road tax imposed on owners of vehicles presumably using the roads. While these few examples are demonstrative of a theoretically sound tax approach, the benefit principle is in fact unworkable on its own when some expenditure is untraceable and there is a general unwillingness to directly finance certain public services.

Further, administrative difficulties arise when attempting to assign greater measures of benefit (i.e. individual worth) with an aim to allocation efficiency. Some argue that benefits increase with wealth; that the middle class and the rich benefit more from public services such as the police, fire departments and the National Guard as they have property of greater value to protect. The common contrary argument is that the poor benefit more in that they are eligible for valuable services they could not otherwise afford, be it childcare benefits, housing, education, etc. The rebuttal to this argument is that the wealthy benefit from the appeasement of poverty in that they will be less likely to fall victim to theft and more violent crimes stemming from deprivation and envy.

The debate continues with whether public services are for the people or for the people's property. If for the people, then surely there should be equal provision. This was John Stuart Mill's argument in *Principles of Public Economy* (Ashley's ed. 1923, p806):

... to assert that individuals receive significantly different benefits from living in a particular society is in effect to assert there is something seriously wrong with that society. (Blum and Kalven 1953, p39).

As an equity rule, the benefit principle is unsatisfactory in that the process of determining the benefits is problematic given their subjectivity. Further, most taxes are not specifically earmarked so the matching process is hindered. Finally, as

established under the utilitarian, egalitarian and current alternative theories of distributive justice, one of the primary governmental objectives for taxation is the redistribution of wealth, which the benefit principle is not capable of addressing. Therefore, for the benefit principle to be equitable, a fair pre-tax distribution must be assumed.

Henry Simons (1938) summed up the shortcomings of the benefit principle as follows:

Where expenditure is made for purposes of general welfare (national defence, internal security), the benefit principle leads nowhere at all; where the government undertakes deliberately to subsidize certain classes (the economically unfit) or certain kinds of consumption (education, recreation), taxation according to benefit is sheer contradiction (Simons 1938, p4).

Regardless of the shortcomings in the benefit tax approach, public perception and acceptance of tax policies are enhanced when taxpayers believe they personally benefit from the fiscal systems to which they are obligated. It is therefore desirable to promote fiscal reform in the light of both benefits received and a fair distribution determined under an ability-to-pay approach.

Ability-to-pay principle

According to this principle, taxpayers should contribute to the required revenues of national and local governments according to their *means*. To be a workable policy, means must be a measurable financial status. Its determinants have been subject to change and debate during its long and distinguished history in tax theory. Within Elizabethan poor law and the legislation of the early American colonies, real property was the common measure of wealth and financial ability. With industrialisation and the development of a pecuniary economy, there was a shift from property to income as the appropriate means index (Musgrave 1959, p94). This however, came with ambiguities that continue to challenge theorists today.

Are two taxpayers with equal annual incomes of equal ability if one is single and the other is the sole provider of a family of four? Are they of equal ability if one has significant holdings in real property in addition to the annual income? Are they of

equal ability is one's income is from labour and the other's is from investments? Are they of equal ability if one's income is constant and the other's fluctuates annually? These few examples illustrate that the criterion by which to determine the ability to pay is complicated by the choice of an index for measurement (i.e. income, expenditure, or wealth), the tax unit (i.e. individual or family) and the time frame (i.e. annual or lifetime).

While the ability-to-pay principle is not without criticism, it is a sounder platform on which to design or reform a tax-structure and from which to evaluate equity. Its principal attribute is that it is capable of addressing the redistribution function. There are different philosophical perspectives of the ability-to-pay principle that include equal sacrifice, equalising contributions, social welfare and utility considerations and comprehensive taxation.

The essence of John Stuart Mills' sacrifice theories¹⁷ is to impose a sacrifice on all individuals based on their means (Utz, 2002). In other words, it is to determine to what extent wealth can and should be redistributed. This is with specific reference to the ability-to-pay premise, in that those with greater abilities make greater contributions. The extent of those contributions varies among the theories in that it may be in absolute terms, proportionate terms or with reference to marginal income sacrifices. The progressivity of the three theories depends largely on the slope of the utility-income curve.

The comprehensive income tax (CIT) takes a different tack in that it is less concerned with progressivity and more with the broadening of the tax base. This theory emerged in the early part of the 20th century and neatly avoids many of the problems inherent in the earlier bases of taxation (i.e. measuring utility and determining the slope of the utility-income curve). Simons' ideal income tax is one that is as broad as possible.

... the broadest and most objective income concept provides the base for the most nearly equitable levies (Simons 1938, p30-31).

¹⁷ The sacrifice theories, which encompass social welfare and utility considerations, were discussed earlier with respect to the utilitarian theory of distributive justice.

Interestingly, Simons began his broadened income base argument with a “rejection of the ability-to-pay tradition” (Utz 2002, p18). However, there is a distinct contradiction between this rejection and his theory, thus obscuring his rejection of ability-to-pay.

Henry Simons’s rejection of ability to pay... has been routinely ignored and his advocacy of a definition of income in terms of economic power has been read as a mere reformulation of the views he opposed (Utz 2002, p35).

A progressive income tax system that allows for the preferential tax treatment of certain income elements is likened to “digging deep with a sieve” (Simons, 1938). Quite simply, preferential tax treatment erodes the tax base and that erosion is greatest at the top end of the income scale. This effect is recognised in the literature on tax expenditure; Surrey and McDaniel referred to it as the upside-down effect (Surrey and McDaniel 1985, p103). According to the Haig-Simons’ all-inclusive definition of income, income is the sum of:

... the market value of rights exercised in consumption and... the change in the value of the store of property rights between the beginning and the end of the period in question (Simons 1938, p50).

The wealthy benefit most from the numerous “exceptions”, “special provisions”, “preferences”, “loopholes” and “leakages” within complex tax systems like the US and the UK simply by being able to structure their tax affairs in such a way as to minimise, delay or even avoid income taxation through investment and consumption choices. A CIT evens the playing field by bringing into taxation all income elements; specifically, (1) *income from things* (land, consumer’s capital), (2) *gain from transactions*, and (3) *social or national income* (Simons 1938, p44-45). By subjecting to tax income that is currently exempt by preference within the US and UK tax systems, the contributions to the broadened bases will undoubtedly increase going up the income scale, thus more heavily taxing those individuals with greater incomes (i.e. greater abilities to pay).

According to Kaldor (1955), consumption is an adequate proxy for individual well-being and welfare and neatly avoids utility schedules (Utz 2002, p21). Kaldor

attempted to reconcile consumption taxation to the ability-to-pay tradition by focusing on equity and neutrality issues in comparison with income taxation.

Taxation according to ability to pay for the last hundred years or more has been a universally accepted postulate, not only amongst political and economic writers, but amongst the public at large. (Kaldor, 1955)

The tax bases dominating current debate are CIT and a straight consumption tax. Tax equity and the ability-to-pay tradition are supportive arguments in both cases.

It is with respect to the ability-to-pay approach to equity that the two levels of evaluating tax equity emerged in the literature: horizontal equity (HE), requiring equal treatment of equals, and vertical equity (VE) requiring an appropriate differentiation among unequals (Musgrave 1959, p160)¹⁸.

It was in the context of early discussions of the ability-to-pay principle that a sharp distinction began to be drawn between horizontal-equity issues relating to the choice of income, consumption, or wealth as a tax base, and the vertical-equity issues relating to the choice of the flat rate or more progressive rate structures (Head 1993, p10).

Horizontal equity (HE)

There are two approaches to defining HE in the literature: the classical approach stipulates that equals should be taxed equally; and the re-ranking approach stipulates that individuals with similar pre-tax utilities should maintain their relative utility positions after taxation.

The origin of the classical approach lies with Smith (1999/1776) and Sidgwick (1962/1874) and has been discussed at length in the literature (Musgrave, 1959, Atkinson, 1970, and Shoup, 1969). The difficulty in defining equals is well recognised throughout the literature (Feldstein, 1976, Fried, 1992, Staudt, 1997, among others). The difficulties stem from the same criteria that were problematic to identifying the ability-to-pay (i.e. index for measurement, tax unit and time frame).

¹⁸ The concepts of horizontal and vertical equity are found in philosophical teachings of Aristotle and the tax maxims established by Adam Smith (1999/1776). The concepts were formulated by Pigou (1928) and then popularised by Musgrave (1959) (Green 1993, p90).

It is impossible to imagine two individuals exactly equal in every way so this principle has been underpinned by *relevant equality*.

It was the difficulty in defining equality that led to the development of the alternative approach of re-ranking as formulated by Feldstein (1976). HE was then defined as follows:

If two individuals would be equally well off (have the same utility level) in the absence of taxation, they should also be equally well off if there is a tax.
(Feldstein 1976, p83)

However, the preservation of the pre-tax order not only applies to HE; it crosses the line into the VE perspective in that the tax system cannot be so steeply progressive as to affect rank. In other words, the tax system cannot “equalise wealth or... give tax subsidies that push the income of one individual up to or beyond that of another with greater pre-tax income” (Staudt 1997, p936).

Once satisfied with the determination of equality, the next obstacle is to develop a satisfactory definition of inequity. This may simply be any difference regardless of the monetary magnitude, or one may define the magnitude in monetary terms and assume the inequity is proportional to the value involved or an increasing or decreasing function thereof (Johnson and Mayer 1962, p458).

While HE has been advocated for centuries, it is not without challenge. A branch of literature dismisses HE as a necessary goal or simply regards it as secondary to VE in design. It has been argued that VE is the basic rule because compliance with VE assures HE while compliance with HE does not necessarily assure VE (Pigou, 1928, Musgrave, 1959¹⁹, and Kaplow, 1989).

Kaplow (1989) challenged recent work on HE on the basis that the normative justification for the principle has not been sufficiently developed. The classical definition of HE, the concept of equal treatment, is “insufficient” when considered on its own. For instance, the assessment of random taxation would be horizontally equitable but not necessarily desirable. Similarly, the application of a zero-tax rate to 80% of the population within a given tax bracket and a 90% rate applied to the

¹⁹ Later refuted in his 1990 paper entitled Horizontal Equity, Once More.

remaining 20% satisfies the classical definition of HE, but would be socially unacceptable. Kaplow argues that a measure of the degree to which HE is violated by any action and consideration for “almost equals” is necessary. This, however, inherently switches the analysis to VE negating the core definition of HE (Kaplow, 1989).

The five possible ways in which a pair of individuals may be affected by tax reform with reference to HE were identified to be that they could:

- *Move further apart (if initially unequal).*
- *Move closer together (still remaining unequal).*
- *Move apart from an initially equal position.*
- *Move together, ending at an equal position.*
- *Begin apart, cross over, and end up apart.*

(Kaplow 1989, p143)

Musgrave (1990) reconsidered the Pigouvian tradition that HE is merely a derivative of VE and VE is the primary norm for tax design. His alternative position was that HE is arguably the minimal rule for fairness and VE is “a matter of social taste and political debate” (Musgrave, 1990).

Musgrave considered HE and VE in “second best settings” rather than the optimal distribution approach. The second best concept is where the fulfilment of all optimum conditions is not necessarily assumed; that a constraint on the general equilibrium system prevents the attainment of one of the Paretian conditions. The constraint “leads to new (or different) Paretian conditions”, which in turn “lead to a condition of maximization subject to the new constraints” (Staten and Umbeck, 1989). In so doing, the social welfare function is assumed given and the equity is evaluated in such a context. Simply stated, the level of pre-tax income is invariant to taxation and welfare is a function of income only. Therefore, assuming uniform

utility functions²⁰, people with equal incomes are assumed to be in equal positions (Musgrave, 1990).

In his conclusion, Musgrave argued that HE is an “end state principle”, one that might be a decisive factor in policy making and not a rule of fair process only, as suggested by Plotnik (1981). Musgrave agrees that perfect compliance with VE implies compliance with HE, but challenges the premise suggesting that HE lacks merit of its own. The consideration of second best solutions leads to the consideration of trade-offs between VE and HE imperfections.

Of course there is the position that *pre-existing* tax systems do not inflict horizontal inequities on a society of equal tastes and a single source of income if individuals are free to choose their activities and expenditures. Individuals make choices based on the existing tax law and any favouritism recognised in one type of activity, expenditure or investment is available to all (of equal circumstance). HE will only be violated by changes in the tax law (Feldstein, 1976). Rosen recognised this possibility and went on to consider the *transitional equity* issue with reform (Rosen 2005, p347).

Feldstein (1976) elaborated on this line of thought with specific reference to the fiscal favouritism shown towards homeowners. The tax advantages of investing in owner-occupied housing are capitalised into the value of the home and the only true beneficiaries of the tax advantages were the homeowners at the time the fiscal favouritism was first enacted. Any subsequent change to remove the tax advantage would result in an immediate capital loss for those invested, as the prices would adjust accordingly (Feldstein, 1976). However, such losses could and should be minimised with adequate forewarning and a reasonable period of time in which to phase-in the change. Evidence of this is with regard to the removal of the UK mortgage interest relief, which was spread out over 21 years (1979-2000) and abolition of mortgage interest relief in Germany, which was compensated by the introduction of an alternative government subsidy (Eigenheimzulage).

²⁰ Rosen (1978) provided a (rare) utility-based evaluation of horizontal inequity. HE was defined in terms of utility rather than ability to pay to demonstrate how such a definition could be used to evaluate tax structures.

The author believes that HE is a sound, indisputable ideal as taxes that discriminate between comparable individuals may result in resentment, evasion, and social unrest. The first objective of this research therefore is to establish how horizontally equitable or inequitable owner-occupied housing tax policies are within the US and UK. In general, empirical work on HE has relied on the re-ranking approach. This research will contribute to the less prominent area in which the classic approach is considered.

Progressivity and vertical equity (VE)

While HE calls for the equal treatment of equals, VE calls for an appropriate differentiation of non-equals. Opinions have differed over time with regard to the vertically equitable tax structures called for by the benefit and ability-to-pay approaches and the sacrifice doctrines.

Tax systems are deemed progressive when *average tax rates* rise with income and regressive when average tax rates fall as income rises. If the average tax rates remain constant despite rising or falling income, then the system is deemed proportional. Another indication has been established with respect to the *marginal tax rates*. If average tax rates are below marginal tax rates, the system is progressive. Alternatively, when average tax rates are above marginal tax rates, the system is regressive. And finally, if average tax rates equal marginal tax rates, the tax system is proportional. These basic definitions of progressivity, proportionality, and regressivity are found throughout the literature (Musgrave and Thin, 1948, Rosen, 2005, Norrengaard, 1990, OECD, 1990, among others).

Progressivity within a tax structure may be achieved by three possible methods. Graduated tax rates are the most obvious method of producing a progressive tax structure. A flat tax rate with an exemption also achieves a level of progressivity; Blum and Kalven (1953), Kornhauser (1987) and Rothbard (2001) refer to this as a degressive tax. Finally, the withdrawal and/or removal of certain tax allowances (i.e. exemptions, deductions and/or credits) at higher levels of income will introduce or enhance progressivity in a tax system. This is sometimes referred to as “backdoor progression” (Byrne, 1995).

There is one type of taxation relevant to this research that results in a contradiction between the two defining criteria. The “slab-tax” produces an average tax rate that rises with income (i.e. indicative of progression) but one in which the average rate is equal to the marginal rate (i.e. indicative of proportionality). Take for example an acquisition tax imposed on the full value of the property at 1% when it exceeds the threshold of £30,000. The average tax rate rises with income (or in this example, consideration) but is equal to the marginal tax rate. The exempt band (£0-£30,000) does not constitute a nil-rate band as such because the tax rate is applied to the full consideration for transactions in excess of this threshold. It is tempting to call such a tax system proportional with effective progression given the two levels of taxation (0% and 1%). However, a thorough examination of the literature leads one to conclude that a proportional tax system is one in which the tax rate is constant at all levels of income (Bankman and Griffith, 1987, Norregaard, 1990, OECD, 1990, Rosen, 2005, among others). As this is not the situation with the slab-tax as illustrated, the correct conclusion is that such a system is progressive.

Arguably, a progressive income tax structure has been established as socially acceptable and politically desirable since inception in the US and the UK. The degree of progressivity has varied over time with regard to the number of tax bands and the associated marginal rates, but both countries have maintained nil-rate tax bands and graduated rate structures throughout their respective histories.

VE implies that the wealthy should pay more tax than the poor because they can afford to do so (i.e. they have a greater ability). Increasing tax rates applied to increasing tax bases ensures a more equal distribution of after-tax income given an inherent natural pre-tax inequality. While the basic concept is generally agreed when one accepts that redistribution is a sound goal for taxation, the rate of progressivity is a matter for debate. The moral value of greater equality is not perceived as an absolute value (Osberg 1993, p77). That said, the very idea of progressive taxation has been and continues to be challenged, and consideration of the various arguments for and against progressivity is now necessary.

A critique of the arguments for and against progressivity

The justification for progressive taxation was first examined by Blum and Kalven in their 1953 seminal work, *The Uneasy Case for Progressivity* and has been widely debated ever since. The main arguments that emerged against progressivity were (a) that it complicates the income tax system, (b) it is “politically irresponsible”, and (c) it lessens the economic productivity of society (Blum and Kalven, 1953). Each of these objections warrants critical examination.

It is commonly argued that graduated tax rates and the removal of certain allowances beyond given thresholds unnecessarily complicate the structure of an income tax system. Such a complicated tax structure arguably stimulates tax avoidance and evasion. Taxpayers will naturally seek to avoid the higher tax brackets and/or the loss of allowances by structuring their tax affairs in such a way as to reduce taxable income. This may be achieved by manipulating the time recognition of certain income, shifting income to related parties of lower tax brackets, investing in non-taxable products, etc. Blum and Kalven suggest that a flat tax rate applied after a subsistence exemption would eliminate the desire to shift income among tax units. Further, while the flat tax would not eliminate the problem of time manipulation, they hold that a progressive tax schedule exacerbates the problem.

In consideration of the supposed complexity of progression, Boris Bittker (1967) asserted that timing issues will “continue to perplex” and once personal allowances and standard deductions are allowed, “income-splitting issues are inevitable” (Galvin, 1969, p33-34). Further subsequent literature addressing the argument of progressivity’s complexity finds that income tax systems are inherently complicated simply by the various definitions of taxable income. The nuances of what is taxable and what is excludable will continue to stimulate tax avoidance, and this complication dwarfs any complication from the application of graduated tax rates. The majority of US taxpayers are able to use simple tax tables rather than calculating their tax by using the tax schedules. The majority of UK taxpayers need not file tax returns as their wage income has the appropriate tax withheld at source. In actuality, taxpayers tend to use software or the online filing systems provided by the tax authorities to calculate the tax due. The removal of tax brackets would not noticeably simplify the current US or UK income tax systems.

Our complex world creates complex transactions which create complex tax issues which lead to complex statutes (Kornhauser 1987, p475).

Blum and Kalven's second objection to progressive income tax is that it is democratically untenable. The top rates are, by design, applicable to a very small percentage of taxpayers. As the tax bands and tax rates are decided by elected representatives, what protection do the top earners have against the majority's representation that may wish to "soak the rich"? Blum and Kalven dismiss this objection by asserting, "majority rule... is superior to any other principle for resolving group decisions" (Blum and Kalven 1953, p19). The issue that emerges is one of constitutionally limiting the power of the majority for the protection of the minority. Blum and Kalven dismiss this as historically unnecessary. Rothbard (2001) is scornful of this position and asserts:

...to protect the rights of the individual, general and prior majority consent to a rigid constitution that severely limits the powers of government is a far better guarantee than constant reliance on the good sense and discretion of the elected 'people's representation'" (Rothbard 2001, p46).

The current debates in the UK on issues such as bankers' bonuses and a proposed mansion tax hint at the growing resentment of the majority, the political pressure on the current government and vulnerability of the wealthy minority to blatant wealth confiscation. Whether or not confiscating powers should be hindered depends on the political ideology of the reader.

The final objection explored by Blum and Kalven (1953) was with regard to the adverse effect progression has on the economic productivity of society. Progression is argued to adversely affect the incentive to work, to take risks (with reference to investing in venture capital) and to either save or consume in a given time.

High tax rates on marginal income create a disincentive to work. Laffer (1979) illustrated this graphically by plotting ascending tax rates against tax revenue, reflecting the elasticity of the supply of labour with respect to net wages. The result is an upside-down U-shaped curve where tax revenues diminish after an optimal level of taxation. If individuals' time is divided between work and leisure, the opportunity cost of leisure is the after-tax reward for working. If the opportunity

cost of leisure goes down (i.e. the after-tax reward for work is reduced by higher levels of taxation), demand theory suggests that individuals will opt for greater increments of leisure time in lieu of work.

Given the fact that the highest rates of a graduated tax system are reserved for a small minority of individuals as previously established, the issue becomes one of work motivation. At that level of compensation, it is believed that monetary remuneration is not the only, or even most significant, incentive. Prestige, power and a sense of responsibility, which may be measurable through monetary compensation, may become more significant drivers for the elite workforce. A significant factor in establishing the relative importance of after-tax compensation would be the accumulated wealth of the individuals in question. Blum and Kalven quoted Simons' premise²¹ that "our captains of industry are mainly engaged, not in making a living, but in playing a game" (Blum and Kalven 1953, p22).

The inefficiency of progression on capital investment stems from the dampening effect that high marginal tax rates have on savings. The cost of consumption is the present cost of the goods and services consumed plus the opportunity cost of the forgone investments as represented by the present value of forgone future income streams. Blum and Kalven oscillate between the destructive effect progressively high tax rates have on capital, and the resilience of the investing community to "gamble whatever the odds" and to "consume less now and to save and invest more in order to maintain their incomes after taxes at desired levels in the future" (Blum and Kalven 1953, p25-26). Rothbard (2001) is quite critical of this section, particularly when Blum and Kalven dismiss a tax system in which saving is promoted due to its regressive nature.

Kornhauser (1987) and Byrne (1995) emphasise the point that the objections based on labour and capital inefficiencies are not specific to progressivity, but to high tax rates in general. Such disincentives would be present if the tax structure were of a high flat tax rate with a relatively generous sustenance exemption. Bankman and Griffith (1987) argue that progressivity can be attained without significant market efficiencies and their research, based on Mirrlees' optimal taxation work (1971), concludes with an optimal tax structure that redistributes income from rich to poor

²¹ Simons, 1938, Personal Income Taxation (p20)

by ‘demogrant’. They conclude with “the case for progressive taxation appears to be far less uneasy than has been claimed” (Bankman and Griffith 1987, p 1967).

With the main objections to progressivity considered and largely dismissed on lack of merit, the inclination is to justify progressive taxation on philosophical grounds of justice. As alluded to at the beginning of this section on tax equity, the utilitarian, egalitarian and feminist frameworks are supportive of progressive taxation to some degree. The libertarian framework would call for progression to the extent that the income was not legitimately acquired and confiscation was deemed appropriate. However, a closer look at the justification for progressivity within the various taxation principles is preferable to these generalisations of distributive justice.

The benefit principle calls for progressivity only if the benefits received by individuals increase to a greater degree in comparison to their rising income. It is not enough to conclude that benefits simply increase with income; the degree to which the benefits increase must exceed the degree to which income increases. Otherwise progression is redistributive and not justified on a pure benefit-tax approach.

The justification of progressivity under the equal sacrifice criterion depends entirely on the assumed utility-income curve. If utility decreases at a rate faster than the increase in income, then progression would be called for under the equal absolute sacrifice theory. With regard to the more complicated equal proportional sacrifice theory, progression is justified when marginal utility declines faster than average utility as income rises (Byrne 1995, p768).

If one embraces an alternative view, be it religious, feminist or some other community-minded view, the case for progression is strong. From this perspective, it is human nature to care for others. The extent of our caring ability is limited however. We cannot care for everyone equally for in doing so, we and the most important people to us will suffer. The feminist literature refers to various levels of connectedness and corresponding obligations to other members of society (Noddings, 2003 and Kornhauser, 1987). Our motivation to care for those within our close personal circle (i.e. immediate family and friends) is greatest. To a lesser degree we are inclined to care for acquaintances and proximate strangers (i.e.

strangers that we somehow encounter and/or who may one day become more important to us). Finally, we are motivated out of a sense of decency and basic humanity to, *as a minimum*, care for the basic needs of non-proximate strangers.

Kornhauser stipulates that basic needs go beyond bare survival needs and include “attainment of the preconditions of liberty that allow us to be free, voluntary agents working towards self-fulfilment” (Kornhauser 1987, p510). Education and a certain level of personal safety and comfort are demanded. While the feminist is obliged to help strangers attain the basics that provide the opportunity for self-fulfilment, their obligation is at a minimum. Therefore, one’s own opportunities should not be compromised or even constrained in any way in the process of aid. Progressive taxation is a way of contributing to the basic needs of members in society, ensuring that the contributor’s opportunities are not compromised or constrained. As discretionary income grows, so too does the ability of the contributor. This satisfies the feminist’s obligation to self and others.

Slemrod (1983) assessed the modern literature on *optimal progressivity* with an aim to shed light on the key elements affecting an optimal tax system (i.e., social welfare function, supply and demand elasticities, social costs of inequality and redistribution). The contributions of Mirrlees (1971), Sadka (1976), Atkinson (1973) and Stern (1976) were briefly discussed. Slemrod concluded that it was unlikely that a precise consensus tax schedule would emerge (p367). Generally, an optimal tax system should have rebates rather than taxation at certain levels of income, the average tax rate should increase with income and marginal rates should not exceed fifty or sixty per cent. No conclusion on whether marginal rates should increase, stay constant or decline with income was made because of the behavioural response factor (Slemrod 1983, p367).

While the debate on progressive taxation continues, one is inclined to concur with Henry Simons (1938) that the case for progressivity ultimately rests on:

“... the case against inequality – on the ethical or aesthetic judgement that the prevailing distribution of wealth and income reveals a degree (and/or kind) of inequality which is distinctly evil or unlovely” (Simons 1938, p18-19).

The aim of this research is not to contribute to the on-going debate on progressive taxation but to establish how vertically equitable or inequitable owner-occupied housing tax policies are in the UK and the US. In addressing this second research objective, VE must be measurable. The degree of progressivity in a given tax system is the generally accepted proxy for establishing VE. Whether a more progressive tax system is considered to be a more vertically equitable one depends entirely on the reader's point of view.

2.2.2. Neutrality and owner-occupied housing

Neutrality refers to taxes that do not affect economic behaviour. If governments subsidise the investment in owner-occupied housing either explicitly with formal subsidies or implicitly with tax concessions, economic behaviour is indeed affected. Wood (1990) recognised two sectors vulnerable to potential distortion in non-neutral tax systems: the private rental sector and the industrial sector. Fiscal favouritism increases the demand for housing which will in turn increase the price, given the relative inelasticity of supply. The preference for homeownership over alternative tenures will reduce the demand for such alternatives, driving down the price of rentals and the corresponding return on investment for landlords. Further, the higher rate of return after taxes results in a greater investment in housing to the detriment of alternative capital investment, as funds will be diverted from industry. This line of thought is not new. Aaron (1972), Feldstein and Slemrod (1980), Hendershott and Slemrod (1982), Rosen *et al* (1984) and Mills (1987) discussed the overconsumption of owner-occupied housing relative to other productive capital investments (i.e. plant and equipment). Shreiber (1978), Rosen (1979), King and Atkinson (1980), Nakagami and Pereira (1996), Freeman (1997) and Thalmann (2005, 2007) considered the impact that favourable owner-occupied housing tax policies have on tenure choice. A brief discussion of the respective works is provided below.

Aaron (1972) discussed the primary market effects of owner-occupied housing subsidies in theoretical terms. He first identified the consumer and investor *personae* of homeowners. The consumer side realises the lower user costs resulting from the subsidies relative to rentals and other consumer goods. The investor side realises the greater after-tax return from housing relative to other investments. The result is owner-occupied housing consumption by certain households that may have

otherwise rented and the investment in more valuable homes by established owners (Aaron, 1972). Aaron provided the first high quality, quantitative study estimating the overconsumption of housing. He estimated the percentage reduction of housing costs as a result of mortgage interest and real estate tax deductibility and overconsumption from micro estimates of housing demand (Mills, 1987).

Feldstein (1982) considered how inflation diverts capital from property and equipment to owner-occupied housing in the context of the US tax system. He offered a simple model that analyses the interaction of inflation and the existing tax rules on the allocation of capital stock with particular emphasis on the role of owner-occupied housing. The essence of his argument is that inflation increases the tax burden on business capital given the facts that the real value of depreciation decreases and nominal capital gains are taxed. This is contrasted with the capital investment in owner-occupied housing where nominal interest may be deducted, implicit rental income is not taxed and capital gains are virtually exempt. Feldstein showed that a rise in inflation would raise the housing capital while reducing the business capital in equilibrium (Feldstein, 1982).

Rosen *et al* (1984) criticized the standard approach in establishing tenure choice on the grounds that it assumes households are certain of the user costs of housing. Given the variability of such costs over time, such certainty is unrealistic. He offered a simple model of tenure choice that specifically allows for the effects of uncertainty. According to Rosen “price uncertainty is shown to have a statistically significant and quantitatively large impact on the percentage of owner-occupiers” (Rosen *et al* 1984, p406). This suggests that previous work which ignored uncertainty may have overstated the impact taxation has on tenure choice. Rosen then speculated on the impact certain tax reforms would have on the investment in owner-occupied housing. The disallowance of mortgage interest and real estate taxes in his sample results in a decrease in the proportion of owner-occupiers, whereas the taxation of capital gains actually increases such investment. The fact that the government would share in the possible loss as well as the gain in capital positively impacts owner-occupied housing investment (Rosen *et al*, 1984).

Hendershott and Slemrod (1982) begin by acknowledging the increase in owner-occupied housing demand as a result of the favourable tax treatment in the US

system. This is elaborated on by identifying the three forms of increased demand relative to a system without such favouritism. First, they recognise the greater demand from existing households with particular sensitivity with higher marginal tax brackets. Second, they recognise a greater number of owning households. And third, the homeownership rate is higher than it would be without the subsidies. The authors then consider three methods of reducing the owner-occupier tax bias. First, they consider a standard fixed rate mortgage and credit market constraints. Second, the removal of the tax bias for owner-occupied housing (i.e. tax imputed rental income and some portion of the capital gain) is considered. And finally, a reduction in the taxation of industrial capital in line with owner-occupied housing is considered.

Mills (1987) challenges the conclusions drawn by many that the favourable tax treatment of owner-occupied housing has resulted in overconsumption. He begins by pointing out the flaws in the argument beginning with the fact that non-housing capital has also received favourable tax treatment in the form of accelerated depreciation and investment tax credits. Another flaw pointed out is the fact that local governments heavily tax housing. And finally, the housing market is heavily regulated which effectively raises house prices and restricts competition. The methodology employed was an “elementary growth model” that estimated the returns from housing and non-housing capital (gross of taxes). Mills found “dramatic evidence of overinvestment in housing relative to other kinds of fixed capital in the US economy” (Mills, 1987). He conceded that the reason for this is largely attributed to the favourable treatment of owner-occupied housing as well as favourable treatment of debt financing over equity.

Shreiber (1978) considered the capitalisation of the favourable tax treatment and their specific effects on low-income homeowners within the US tax system. He asserted that such favouritism could in fact penalise “those for whom the extra cost associated with higher price exceeds the tax saving” (Shreiber 1978, p101). Shreiber proposed a refundable tax credit equal to the percentage of the excluded imputed rental income plus the mortgage interest and real estate tax expenses. While this would improve vertical equity relative to a system that excludes implicit rental income and allows deductions for mortgage interest and real estate taxes, it does not

address the distortion in tenure choice. Shreiber maintained that if the objective is to promote homeownership, then the credit should be exclusive to homeowners.

King and Atkinson (1980) considered the reform of owner-occupied tax treatment as well as the system of determining local authority rents in Britain. Their focus was on the absence of taxation on imputed rental income and the abolition of Mortgage Interest Relief at Source (MIRAS) as well as rents and housing allowances. The authors mused that greater accessibility to homeownership may result from such reforms, as the capitalisation of tax changes would reduce housing prices.

Nakagami and Pereira (1996) analysed the budgetary and efficiency aspects of the exclusion of imputed rental income and the deductibility of mortgage interest in the context of a dynamic general equilibrium model of the US economy. Their model considered three sectors: the production of consumable goods (i.e. food, textiles, etc.); the production of residential capital; and the production of non-residential capital (i.e. transportation and machinery). They found that changes to the existing owner-occupied housing policies (i.e. the introduction of an imputed rental income or the abolition of the mortgage interest deduction) would “decrease the relative price of renting versus owning”.

Freeman (1997) examined the relevance of existing tax and subsidy frameworks of twelve OECD countries in relation to the prevailing patterns of tenure. His objective was to determine whether or not clear relationships existed between the two. The hypothesis was “that differential tax and subsidy treatment between tenures will modify the tenure pattern in directions which, other things being equal, can be predicted” (Freeman 1997, p161). His conclusion was that evidence from five countries strongly supported the hypothesis. The remaining seven countries’ results were “less strong and sometimes inconsistent” with the general hypothesis (Freeman 1997, p172).

Thalmann (2005, 2007) was critical of prior owner-occupied housing tax research that limited the analysis of equity and tenure neutrality to a comparison of the tax burdens borne by renters and homeowners. He asserted that the economic incidence of landlord taxation fell on renters in the form of higher rents. Thalmann’s methodology was similar to Feldstein’s re-ranking approach to horizontal equity

analysis. “Tenure neutral tax and subsidy systems... preserve the ordering of user-costs” (Thalmann 2005, p2). Thalmann distinguished tenure neutrality from tenure equity in that neutrality preserves the financial advantages absolutely, whereas equity demands higher taxes from those with cheaper tenure. He found four equitable tax alternatives, three of which impute rental income on the homeowners, and the fourth allows for a rental deduction of tenants (Thalmann 2007, p293-4).

2.2.3. Tax Incidence

Consideration of the *incidence* of taxation complicates the evaluation of tax equity with regard to distributive fairness as the taxes imposed may not be borne by the legal taxpayer. The literature distinguishes between the formal or statutory incidence (legal and intended) and economic (effective) incidence. Variations between the two are the result of tax burden shifting. This may be done with regard to commodity, profit and capital taxes in either a forward or backward manner. For instance, VAT is charged between businesses (legal taxpayers) at progressive stages of development and distribution. The final tax however, is shifted forward to the ultimate consumer (effective taxpayer). Corporation tax is levied on the corporation but the burden is borne by either the consumers and shareholders (shifted forward) or the producers (i.e. land owners) and labour force (shifted backward).

Taxes on capital income and property are not so easily explained. The controversy stems from academic disagreements on theoretical and empirical issues including the appropriate market structure for analyses, the extent of international capital mobility and parameter values for numerical simulations of theoretical models (Zodrow, 1999).

Theoretical development

Musgrave (1959) advanced incidence theory with two main concepts. First, both the sources and uses of household income must be considered. A change in real income may result from a change in disposable income or from changes in the price of products or services purchased (Musgrave 1989, p240). Secondly, there are three broad categories of incidence to consider: specific (absolute), differential and balanced budget incidences.

In analysing tax incidence economists have used three basic approaches: (1) partial-equilibrium²² model, (2) general-equilibrium²³ model, and (3) estimating individual tax burdens directly using large micro-data sets (Zodrow, 1999).

Further, in analysing the distributional effects of specific taxes and/or overall tax systems, economists have adopted one of two general approaches: (1) division of individuals/ households into groups based on some measure of their annual income and (2) division of individuals/households into groups by age and then an estimation of savings and consumption during working and retired years through the use of a “life-cycle” model. The latter approach is underpinned by Friedman’s (1957) permanent income hypothesis and life-cycle considerations.

Fullerton and Rogers (1993) highlighted the shortcomings²⁴ of these approaches and developed a hybrid model intended to “capture the fundamental distinction between rich and poor individuals classified on the basis of lifetime income” (Fullerton and Rogers 1993, p4). The authors’ approach had five steps ending with the evaluation of each US tax by comparing their estimated tax burdens to a proportional tax substitute. Taxes were then defined as being progressive when the lifetime tax burden as a fraction of lifetime income increased as lifetime income increased (Fullerton and Rogers 1993, p5). The authors noted the distinction between the efficiency and distributional effect of taxation. Tax shifting may result through behavioural changes resulting from tax imposition thus changing the distributional effects. This may have a knock-on effect on efficiency as measured by the excess tax burden. Auerbach (1985) provides a thorough discussion on this concept.

²² The research by Pechman and Okner (1974) is recognised as the most widely cited empirical study on annual tax incidence across households.

²³ Introduced by Harberger (1962). Ballard et al (1985) provided a comprehensive general equilibrium model for annual tax incidence analysis.

²⁴ With regard to the annual income approach, the lowest income group includes both young individuals beginning their careers and the retired individuals, both of whom may have higher earnings at later or earlier times, respectively. Also, annual income is more volatile than lifetime income.

With regard to the life-cycle model, it can only consider one type of individual/household in each age group, thus missing the fundamental distinction between rich and poor which is key to the analysis of tax distributional effects.

Given the difficulty of measuring lifetime income, Poterba (1984, 1991), Metcalf (1993) and Feenberg, Mitrusi, and Poterba (1997) used consumption as its proxy. Gale, Houser, and Scholz (1996) used an alternative approach in their *cohort analysis* which considered the impact of tax changes on married families with heads in the age range of forty to fifty (Metcalf 1998, p6-7)

The partial equilibrium model is argued to be too simplistic for the analysis of housing tax policies, as it is incapable of recognising important effects on markets other than the one in which it is being assessed. McLure (1975) posed a further criticism of partial equilibrium models with regard to the focus being on incidence in terms of producers and consumers. He maintained that:

... one would like to go 'behind the supply curve' and identify the factor owners who bear the producer portion of the tax burden, and go 'behind the demand curve' to determine which types of consumers are adversely affected by tax-induced commodity price increases (McLure, 1975); (Zodrow 1999, p200).

Such shortcomings are overcome with the static general equilibrium model in which market interaction and individual behavioural changes are considered. General equilibrium models have been used to analyse real estate taxation (Mieszkowski, 1972, Zodrow, 1999 and Mieszkowski and Zodrow, 1984) where it was concluded that the capital owners bore the average burden. The primary insight general equilibrium modelling offers is the relative importance of the other markets affected by taxation, beyond the market in which the tax is introduced. Harberger (1962) found that the elasticities of commodity demand and substitution in production are critical factors in determining the magnitude of the 'substitution effect' and the 'output effect' (Zodrow 1999, 201). Berkovec and Fullerton (1992) identified the multiple and indirect effects of housing tax policies which, coupled with the size of the housing sector, advocates general equilibrium analysis. The overriding message borne out of both partial and general equilibrium analyses is that the statutory incidence of taxation generally tells us nothing about who really bears the tax burden.

While equilibrium analysis does not form part of this research, it is the underpinning of *tax capitalisation*. This research considers the capitalisation of tax burdens with respect to incidence theory. This is discussed in the following section with specific reference to property taxation and the mortgage interest deduction with concluding remarks on the research assumptions.

Tax Capitalisation

Tax capitalisation refers to the process by which the price of an asset is affected by a change in its tax treatment. To illustrate, if a particular bond is deemed tax exempt in a perfect capital market, the price of that bond will increase so that the tax-exempt interest receipts equal the same net rate of return on capital value as the non-exempt alternatives. If as an alternative, an annual tax is introduced on an asset, the value of the asset will be reduced by the present value of all future tax payments.

Saunders and Webb (1988) highlighted the differences in fiscal privileges afforded to a varying range of savings vehicles with specific reference to the effect of tax exemptions and reliefs on such assets. The authors considered the incidence of the tax privileges and the extent to which investors actually benefit from them in their work.

Thus tax privileges are capitalised, and this means that the gain to the investor from holding a privileged asset is, at least partly, offset by the higher price that must be paid to purchase it (see Bailey (1974), Bittker (1980) and Galper and Toder (1981)). A well-known example is the effect of the tax advantages of owner-occupation in raising the price of houses (Saunders and Webb 1988, p83).

It is well recognised that tax policies regarding capital assets in general may be *capitalised* into the assets' value. The degree of capitalisation will depend on the supply and demand elasticities of the asset. The family home is by no means an exception to this phenomenon. Both tax levies (i.e. acquisition and property taxes) and tax subsidies (i.e. mortgage interest relief and capital gains tax exemptions) may affect the value of the home. While the tax levies potentially reduce the capital value, the subsidies and corresponding benefits provided through public expenditure from property tax revenue potentially increase the capital value. It is the difference

between levies and subsidies (i.e. the fiscal surplus or deficit) that may ultimately be capitalised.

Property taxation

There are three alternative views of property taxation with varying implications for incidence assumptions and conclusions. There is the “old (traditional) view” originating with Edgeworth (1959/1897) and associated with Simon (1943). This gave way to the “new view” under Brown (1924). Also well recognised in current literature is the “benefit view” as articulated by Hamilton (1976). Each of the three alternative views may be valid in different contexts and/or reconciled theoretically and therefore not mutually exclusive (Rosen 2005, p528).

According to the *traditional view* property taxes are excise taxes and are therefore *regressive* as a greater portion of low-income budgets are spent on housing expenditures. Under this view, the portion of the tax applicable to land accrued to the original landowner when the tax was introduced in that the value of land would have fallen relative to the future streams of the tax liabilities (*property tax capitalisation*). The other portion of the tax applicable to the structure falls on the current tenant (Rosen, 2005).

If the traditional view is taken, it would be logical to apportion the current property taxes of rental properties between land and homes in that the value of the property was reduced when the property tax was first introduced and, assuming the current owner succeeds the owner at the time of the tax introduction, the tax has been shifted backward. Therefore, according to the pure traditionalists, only partial capitalisation of the property tax into rents is justified; the portion attributed to the structure, not the land. However, the portion attributable to land is often a fraction of the total value of the property (i.e. 20%) and most empirical research on property tax incidence by income class simply assumes that the full property tax falls on the occupants (Netzer, 1966).

According to the *new view*, property taxation may be seen as the taxation of capital wealth that effectively lowers the rate of return and therefore may be seen as progressive in income distribution given the fact that the proportion of income from capital tends to rise with income. Property tax under the new view falls entirely on

the owners of capital (i.e. the current owners, not the original, hence the tax is shifted forward) (Rosen, 2005). With respect to the *user-cost framework*²⁵, the landlord of a rental property would expect to recover the cost of this tax in the rental income, hence shifting the tax forward once more.

Mieszkowski (1972) attempted to reconcile the old and new views by decomposing the rate between an average national property tax rate and its deviation to the local rate. Accordingly, the first component can be viewed as a national tax on housing capital with a burden resting on *all* capital. The second component can be viewed as a differential tax that may be positive or negative, which in turn, may be shifted forward or backward (Metcalf and Fullerton, 2002).

The third view is that property taxes are not taxes at all but *user fees* (i.e. consumption costs of public services), thus rendering any analysis of incidence meaningless. According to Hamilton (1976):

Mobile taxpayers would not live in any jurisdiction that charges a tax higher than the value of its local public goods and services – unless property values adjusted to reflect the differential between value of services received and taxes paid (the "fiscal surplus")... house prices would rise [or fall] by the capitalized value... (Metcalf and Fullerton 2002, p14-5).

This view loses ground with regard to the basic difference between a user charge and tax; the former is a voluntary payment for services received and the latter is a compulsory payment where no such correlation between payments and services exists. That said, for purposes of this research, one would assume the obligation for such a fee would rest with the occupants.

Regardless of viewpoint, some degree of property tax capitalisation is universally accepted; the manifesting differences are simply the extent. In measuring the horizontal and vertical equity of real estate taxation in the US for purposes of this research, full capitalisation of property taxes into rental obligations is assumed in accordance with the new view and the user-fee view and with regard to the user-cost framework.

²⁵ The user cost framework is discussed in detail in Section 4.5.2 of Chapter 4 (Methodology).

Mortgage Interest Relief

While the concept of tax capitalisation has been widely considered with regard to property taxation, the research regarding housing finance is comparatively sparse. Kay and King (1978) first argued that the benefit from mortgage interest relief did not accrue to homeowners as expected. Instead, the increased purchasing power (post-tax) drives up the price of housing. In other words, mortgage interest relief is capitalised in the price of housing. Barrow and Robinson (1986) disagreed with Kay and King's assertion as stated above and attempted to establish the accrual of benefits from mortgage interest relief. The authors found however that the benefits were not uniformly distributed and concentrated on their relative impact on particular groups within the housing market. They concluded by identifying "two key features of the tax capitalisation process...(a) housing capital gains and (b) net mortgage payments, especially the 'cash-flow effect'" (Barrow and Robinson, 1986, p63).

Berger *et al* (2001) considered the capitalisation of below-market interest subsidies from a sample of nearly 300,000 housing transactions in Sweden where low-interest loans collateralized by and tied to the property were included. The subsidy was available between 1975 and 1993 for new construction of "normal" housing (i.e. not excessively large). The findings indicate "very clearly that below-market financing is capitalised into house prices" (Berger *et al* 2001, p213). Two caveats were noted: first, "the estimate of the below-market financing may be measured with significant error", and second, where wealth or income constraints exist, "the expected coefficient on the below-mark financing variable could differ from unity" (Berger *et al* 2001, p213). The authors called for further research to determine the possible impact of such constraints.

More recently, Hansen (2011) considered the tax incidence of the US mortgage interest deduction by using the nominal limitation of the deduction²⁶. He found that the interest rates associated with mortgages beyond deductibility were 3.3 to 4.4 per

²⁶ Mortgage interest relief is available up to \$1 million of indebtedness. This is fully explained in Chapter 3 (Country Summaries).

cent lower than mortgages where the deduction was available. This translates to 9 to 17 per cent of the subsidy shifting to the mortgage lenders with the range depending on the assumed marginal income tax rate and the Treasury bond rate (Hansen, 2011).

Once again, with consideration for the user-cost framework (discussed in the following section), full capitalisation of mortgage interest expense into rental obligations is assumed.

2.3. Assessing owner-occupied housing policies

The previous section concentrated on establishing the conceptual framework of tax equity analysis by reviewing the relevant literature. The following section focuses on the specific techniques used to establish homeownership subsidization and the measurement techniques of the corresponding inequities, with a review of that specific branch of literature. First, the overall tax structural differences are discussed as they determine the normative tax framework in which housing taxation must be considered. This leads into the discussion of owner-occupied housing tax policies and the respective departures from the generally accepted (normative) framework.

2.3.1. Overall tax structure

Consideration of the overall tax structure of a country is required before focusing on the owner-occupied housing facet within that structure. Talon (1986) recognised two distinct types emerging from the various OECD countries' tax structures. One tends to rely more on direct taxation of income and capital coupled with a high proportion of property taxation (English-speaking countries). The second tends to rely more on indirect taxation with relatively low property taxation and high social security taxation (Latin countries). Wood (1990) also acknowledged these structural distinctions and observed:

These differences are reflected in the tax treatment of housing assets, with the former group placing a greater reliance on taxes levied on housing returns, and the second group relying more heavily upon taxes applied to transactions in housing assets and recurrent property taxes (Wood 1990, p811).

The above statement by Wood however, seems to be a complete contradiction. A more logical conclusion is that the English speaking countries rely more heavily on the transaction taxes (acquisition and capital gains taxes) and property taxes as opposed to taxes levied on housing returns (i.e. imputed rental income) as evidenced in the US and the UK. If by housing returns the author was referring to capital gains taxation rather than or in addition to income taxation, then the statement would be partially true. The obvious contradiction remains with property taxation in that Talon recognises this as important to the English speaking countries, whereas Wood has included it with the taxes of the “second group”. Further, acquisition taxes may be direct in some countries and indirect in others. In the US and the UK, the acquisition taxes are in fact direct, and have become a significant source of revenue in the UK, in particular.

By first recognising the variations in general tax structures, the deviations from the *generally accepted tax structures* may be deduced. This is an essential first step in identifying and measuring *expenditures* or *subsidies*. A *tax expenditure* is a departure from a *benchmark* or generally accepted tax structure providing favourable treatment for a particular group of taxpayers or type of activities (O’Sullivan, 1986). The term “tax expenditure” originated with Stanley Surrey during his time as the Assistant Secretary for the Treasury for Tax Policy in the US in the 1960s (Infanti 2004, p8). Now the literature often refers to subsidies, concessions, reliefs and expenditures synonymously.

The *tax expenditure concept* recognises two categories of tax provisions, the structural provisions and the tax preferences (or tax penalties). According to Surrey and McDaniel (1985), the normative income tax emanates from the definition of income, established exemptions, applicable tax rates, accounting rules, taxable units and international considerations. The tax preferences include all provisions not otherwise classified as structural provisions. They are departures from the normal tax structure with an aim to favour particular investments, people, industries, activities, et cetera. They represent “government spending... effected through the tax system” (Surrey and McDaniel 1985, p3).

There are effectively two branches of government, the revenue collection branch and the spending branch. Surrey and McDaniel demonstrate through a deconstruction of

the dichotomy, that taxing and spending are not “either/or” but possibly “both/and” (Infanti 2004, p44). A tax expenditure is a covert way of government spending, one that occurs behind a veil of accountability. Surrey and McDaniel identified several shortcomings of tax expenditures in comparison with direct expenditures. These include the upside-down effect of tax exemptions and deductions, the associated inefficiencies, their adverse effect on tax rates (by keeping them too high), the low visibility, the exclusion of non-taxpayers, and the inherent administrative complexities (Surrey and McDaniel 1985, p102-7).

A quantitative problem lies in identifying the benchmark tax system against which the system containing an exemption or allowance may be measured. The concept of a tax expenditure “assumes that it is possible to define a normal tax structure; even though such a norm may differ as between countries and within a country over time” according to a recent OECD Report by the Committee on Fiscal Affairs (O’Sullivan 1986, p33).

Owner occupied housing is particularly problematic in this respect in that it does not fall neatly and completely into one category of goods or services. From the provision of basic shelter to a vehicle for savings, the family home may be viewed as a consumable service and/or an investment. Identifying the benchmark in such a situation is fraught with conflict.

2.3.2. Owner occupied tax preference

In order to establish the extent of favouritism that tax authorities bestow on homeowners, it must first be established how the family home should be optimally taxed. To determine optimal taxation, one must first establish what the family home represents: consumable product, financial asset, and/or investment asset. It is generally accepted within the literature that owner-occupied housing can be all three given its ability to fulfil a wide variety of necessities and benefits. From the basic provision of shelter to the potential source of supplemental income in retirement, the family home is a complex taxable entity.

The early literature and empirical studies viewing housing primarily as a consumption good include Laidler (1969), King and Atkinson (1980), Rosen and Rosen (1980) and Hendershott and Shilling (1982). The tendency now, however, is

to recognise owner-occupied housing primarily as an investment, which provides services secondarily. This view is recognised in literature by Rosen (1979), De Leeuw and Ozanne (1981), Feldstein and Slemrod (1980), Henderson and Ioannides (1983), Goodwin (1986), O'Sullivan (1986), Flood and Yates (1989), Wood (1990), Poterba (1984 and 1992), Haffner and Oxley (1999), Haffner (2000 and 2003), and Thalmann (2005 and 2007).

There are two reasons for this shift in perspective. It recognises a greater taxable capacity in the owner-occupier and it recognises the potential distortion of resource allocation when tax systems are not neutral between different types of expenditure (i.e. private rental sector and the industrial sector).

The only way to apply a tenure-neutral tax policy (presuming landlord incomes and other business incomes are to continue to be taxed similarly) is to treat home owners as investors and to tax owner occupied housing as an investment good, instead of a consumption good (Flood and Yates 1989, p202).

Once a decision on how the home is to be viewed for tax purposes is made, departures from a generally accepted tax structure or benchmark may then be established and measured. If owner-occupied housing were seen as an investment good, mortgage interest relief would be a departure if the country in question did not offer investment interest relief for alternative investment asset acquisitions. More generally, as an investment, housing to an owner-occupier should have the same tax treatment as a rental property to a landlord and thus recognise imputed rents with offsetting costs. It is a mistake to identify both the allowance for a mortgage interest deduction and the non-taxation of imputed rental income as tax expenditures simultaneously. If the taxation of imputed income is called for, then the mortgage interest as well as other user costs should be deductible. Both cannot constitute departures at the same time. Further, as an investment good, capital gains taxation should apply.

Alternatively, if owner-occupied housing is seen as a consumable good, there should be no income tax assessment nor should there be any income tax allowances for costs (i.e. mortgage interest). Capital gains taxation would not be applicable either.

Indirect taxation would be relevant as it is with other consumable goods. The Sixth Council Directive²⁷ specifies the uniform basis for applying the Value Added Tax (VAT) relevant to the UK. Under Article 4, owner-occupied housing (with associated land) can only be subject to VAT when sold new by a commercial supplier. An exemption is allowed in those countries with national legislation exempting such transactions before compliance with the Sixth Directive. The UK applies a zero rate of VAT to such transactions, which allows the supplier to reclaim input VAT. The US does not have a VAT, but most states administer a sales tax indirectly. Homes are specifically exempt from such taxation.

Most tax systems will lean more towards investment or consumption good treatment, but fail in one or more of its policies. Take for instance the UK. All the boxes are ticked for consumable goods treatment but for the fact that VAT is not assessed on new or existing homes. While compliant with national and EU law, the zero-rating of VAT in the UK may be construed as a departure, depending on the benchmark applied. Further, Haffner (1993) noted that certain countries might seem to treat residential property as a consumable good inadvertently and unintentionally, with specific reference to the UK. The UK assessed an income tax on imputed rental income, consistent with the treatment of an investment, but abolished this tax in 1963 because the existing system's valuations were more than twenty years out of date and to update the system would be very unpopular (Haffner 1993²⁸, p51).

Flood and Yates (1989) recognised the relevance of first classifying the home as consumption good or investment good. As a consumption good, the house is not income tax relevant (i.e. no income should be recognised nor allowances deducted). This is the benchmark appropriate for countries like Australia, and used for the net expenditure calculation. As an investment good, the owners should be taxed the same way as landlords (e.g. imputed rental income with offsetting deductions).

Haffner (2000) established her perspective on housing in that it 'is an investment good that generates a flow of services.'²⁹ The author takes an economic position in

²⁷ The Sixth Directive of the Council of Ministers of the EC (Council Directive 77/388 EEC) enacted May 17, 1977.

²⁸ With further reference to Hills (1991).

²⁹ With reference to Hall and Jorgenson (1967).

defining the subsidy: it is the difference between the cost of producing the housing service and the price of consuming it (p58)³⁰. If the difference favours the housing service over the alternative good or service, the result is a loss in revenue for the government in the form of a tax subsidy; otherwise the result would be a tax penalty. In order to measure the subsidy, a 'normal, standard, normative or benchmark production cost' is required. The differences between the housing costs and the benchmark yield the formal (first-round) subsidy.

According to O'Sullivan in a report for the OECD:

Since owner occupation does generate imputed rental income and has the potential to generate capital gains, it is difficult to conclude that it should not be taxed as any other productive asset (O'Sullivan 1986, p34).

The author went on to define tax expenditures with reference to economic theory; it is the difference between benchmarks costs (economic costs including tax liabilities) and the costs assumed by owner-occupiers within a tax system. Two alternative benchmarks were identified in his paper: the first established with the concept of tenure neutrality and the second established with the more general concept of tax neutrality (O'Sullivan 1986, p34).

2.3.3. Benchmarks

It is common practice in the literature regarding tax expenditure analysis to establish benchmarks against which tax policy and tax reform may be measured. This is a comparison of the tax treatment in question to an alternative or hypothetical tax treatment. In essence, the literature attempts to 'establish a consistent basis for the treatment of owner-occupiers based upon the economic costs (including tax liabilities) of housing (O'Sullivan 1986, p34).³¹ There is a recognised hierarchy of benchmarks regarding homeownership taxation that progressively reduces

³⁰ With reference to Ermisch, 1984, p. 3; Pearce, 1986, p. 406; O'Sullivan, 1986, p. 32; Hills, 1991, p. 57).

³¹ Further literature regarding the benchmarks includes Flood and Yates (1989), Wood (1990), Hancock and Munroe (1992), Haffner and Oxley (1999), Haffner (2000), and Thalmann (2005 and 2007).

distortions within a tax system.³² While tenure and tax neutrality are commonly recognised in the literature, Flood and Yates (1989) recognised another step that actually precedes these (i.e. the bottom of the hierarchy) in the ‘commonly accepted’ benchmark. Hancock and Munroe (1992) also acknowledged the three benchmarks as described by Flood and Yates (1989) and recognised the difficulty in establishing an ‘ideal neutral’ with reference to the comprehensive income tax (CIT) approach. Their focus was on the first two benchmarks: cash-flow subsidies (existing tax structure approach) and economic subsidies (tenure neutral approach).

The existing ‘commonly accepted’ tax system benchmark

This benchmark corrects for the explicit and obvious implicit favouritism. Subsidies under this analysis include the exemptions to direct and indirect taxes on housing to certain individuals (i.e. circuit breakers within the US property tax system, similar reliefs in the UK for council tax, exemptions from acquisition taxes for first-time home purchasers, etc.).

With regard to income taxation, the income tax treatment of another item (good or service) is identified as the neutral benchmark against which the income tax treatment of the home is compared. In actual practice, given the difficulties in classifying the home as a wholly consumption or investment item, the fiscal benchmark is often taken to be the mortgage interest relief, which implicitly treats housing as a consumable good (Haffner 1999, p149). Therefore, a with-and-without comparison would be conducted: the tax liabilities determined with the mortgage interest relief versus the tax liabilities recalculated without the relief, the difference being the tax subsidy. The attraction of this methodology is that it may yield comparable international data if applied consistently.

A ‘tenure neutral’ benchmark

This benchmark corrects for imputed rents. In so doing, owner-occupied housing is recognised as an investment good rather than a consumption item. The aim is to treat the owners of property similarly, regardless of the use to which the house is put.

³² The authors recognised that the methodology above produces first-round, approximate estimates as no account for capitalisation has been made.

Common practice is to apply the same fiscal treatment to the homeowner as experienced by an investor in rental real estate (landlord) within the tax system. This approach recognises the ‘stream of taxable imputed rental income, with all costs and mortgage interest allowed as a deduction’ (Flood and Yates 1989, p202).

The difficulty arises when there are alternative treatments of landlords within a country and across countries when international comparisons are being made. For instance, the allowance of rental losses varies in the US between commercial and private landlords, and varies further depending on whether the private landlord actively participates or not in the business. The approaches in such a situation are to identify a hypothetical landlord for all countries and apply the same standard, or to recognise a particular landlord within the country in question that is assumed to be ‘treated correctly in the national context’. If the former approach is taken, the subsidy is the deviation from the hypothetical standard; in the latter the differences in subsidisation within countries are comparable across countries (Haffner 1999, p151).

A ‘tax neutral’ benchmark

This benchmark corrects for differences in income and capital gains. The aim is to treat investments and financial assets similarly. In so doing, two possible benchmarks have been identified. Firstly, one may tax all realised capital gains in line with other income. Alternatively, one may tax only the real portion of interest and capital gains (inflation adjusted) (Flood and Yates 1989, p294).

Haffner (2000) defined tax neutrality with respect to owner-occupied housing taxation as the condition that it is taxed as any other investment (i.e. full taxation of imputed rental income and capital gains). The author purported that tax neutrality is the ‘correct benchmark’³³ and her chosen one as it aligns with her presentation of an economic approach.

Variations in the literature

The tenure and tax neutral benchmarks are recognised by Pulo (2010) in his research into the Australian owner-occupied housing tax expenditure, although he used a

³³ With reference to Cnossen (1990) and Sommerhalder (1996).

slightly different approach. He employed an “investors’ benchmark” by which capital gains and net imputed rental income are taxable (i.e. tenure neutral benchmark). His second benchmark excluded imputed rental income and the associated deductions. This benchmark is with reference to the “mutuality-preserving principle”. With a relatively minor reduction in the tax expenditures established under the first benchmark, this modified benchmark established the fact that deductible expenses largely offset the imputed rental income. His third benchmark excluded imputed rental income and allowed partial deductions as deemed justified in contributing to the taxable capital gain. This third benchmark is a hybrid of the previous two benchmarks.

The third objective of this research is to establish the tax equity impact by modifying the existing UK and US tax systems for the three increasing levels of neutrality. A ‘commonly accepted’ benchmark is followed by the tenure neutral and then tax neutral benchmarks in this research.

2.3.4. Measuring tax expenditures

There are three recognised measures of tax expenditure: revenue forgone, revenue gained and the equivalent outlay. The revenue forgone method quantifies the loss in revenue under the existing tax structure (*benchmark*) specifically due to the tax expenditure(s) by comparing it to an alternative (hypothetical) tax structure, one with the tax expenditure(s) eliminated assuming no behavioural change (first round effect). This method of valuation is well recognised in the literature and has been applied at both the macro- and micro-levels of analysis. Wood (1990) asserts it to be the most commonly used method of the three. The revenue gained method attempts to quantify the impact on revenue from behavioural changes (second round effects). While this is a more general method, it is conceptually difficult to implement. The equivalent outlay approach hypothesises the substitution of a direct expenditure with a tax expenditure. All three methods are well recognised and used throughout the OECD countries (O’Sullivan 1986, p36-37).

Within the confines of revenue-forgone measure, Flood and Yates (1989) presented two sub-measures of tax expenditure, the net expenditure method and the service flow method. The net expenditure method would be used to calculate the tax

expenditure under the first benchmark (the existing “commonly accepted” tax system). It is simply the difference between all recurrent expenditure on housing and capital (e.g. grants and loans) and the receipts and repayments from homeowners. The service flow method looks at the comparison of annual costs³⁴ of the flow of housing services received to those without government intervention. The private rental sector is used as a benchmark. Where a rental property has two parties to consider (e.g. the landlord and the tenant), the owner-occupied house has one who effectively embraces both roles. The service flow method recognises the costs of occupying the home in comparison with market rents and the costs of owning the home in comparison with landlord costs.

Haffner (2000) recognised housing expenditure and *user-costs* as distinct concepts for comparing housing costs. These are an elaboration on the service flow method established by Flood and Yates (1989). The author’s definition of housing expenditure is effectively a cash flow concept that accounts for all inflows and outflows with regard to the home. Taxation positively (i.e. property and indirect assessments) and negatively (i.e. mortgage interest and real estate tax deductions) affects the cash flow. The author recognises the shortcomings of using this method in comparison in that it does not take into account the opportunity cost of the owner’s equity or the capital gains or losses to which the home is subject. These factors are accounted for in the user cost concept, which underpins the simulations constructed for this study and discussed at length in Chapter 4 (Methodology).

The user-cost concept was also used by Ebrill and Possen (1982), Hendershott and Slemrod (1982)³⁵, Mills (1987)³⁶, Berkovec and Fullerton (1992), Englund *et al* (1995), Sheffrin and Turner (2001), Van den Noord (2001 and 2003), Poterba (1984 and 1992) and Poterba and Sinai (2008). Commonly, the one-off levies (transaction taxes) are either ignored or are annualised, disregarding the time value factor.

³⁴ More specifically, in measuring tax expenditure, a common economic approach is with reference to the user costs of housing. This methodology will be considered in the following section.

³⁵ Hendershott and Slemrod (1982) were briefly discussed in an earlier section (2.2.2: Neutrality and owner-occupied housing).

³⁶ Mills (1987) was briefly discussed in an earlier section (2.2.2: Neutrality and owner-occupied housing).

Haffner's comparative study (2000) annualises the transaction taxes, as does Poterba's work (1984 and 1992).

Berkovec and Fullerton (1992) analysed the effects of taxation on tenure choice in the presence of uncertainty through a general equilibrium model. The authors maintain that such effects are complicated by the "non-taxation of imputed net rents of owners, depreciation allowances for landlords, relative taxation of corporate capital, deductions for property taxes, deduction for nominal interest paid, a graduated personal rate structure, diversity of household preferences, the constraint of consuming as much owner housing as is invested, and general equilibrium feedback effects on relative rates of return (Berkovec and Fullerton 1992, p 425). The authors found that investment in housing would actually rise with the removal of implicit benefits to homeowners as a result of the "variance effect" which encourages such investment given the sharing of risk. In their study, the variance effect largely offsets the "rate of return effect" in which returns are adversely affected by the removal of tax subsidies or the introduction of tax burdens (Berkovec and Fullerton, 1992).

Englund *et al* (1995) discussed the impact the Swedish tax reforms implemented between 1989 and 1991 had on the housing market. They maintain that the reforms were not entirely accountable for the 30% observed drop in house prices that followed, and that they were in fact accountable for less than half the drop (i.e. a 13% - 14% reduction). The goals of the reforms were to improve the capital allocation (i.e. residential and business capital) and the allocation within the housing sector. The first goal required a rise in the user cost of housing capital relative to business capital. The second goal required a reduction in the user cost differentials across households. The two goals were achieved with the reforms. (Englund *et al* 1995).

Sheffrin and Turner (2001) considered the possibility of efficiency gains from taxing realised capital gains while allowing for full capital loss offset by homeowners on a national (diversified) level. They simulated the effect of such taxation using micro-level data from the American Housing Survey (1985-95), measuring the expected returns and the time-varying risks (Sheffrin and Turner, 2001). The authors identified two effects from such taxation: the mean effect, whereby taxation reduces

the expected return; and the variance effect, whereby taxation reduces the volatility of the return. The mean effect has an obvious negative impact on homeowners, but this may in fact be offset by the variance effect. However, and contrary to earlier studies, including that of Berkovec and Fullerton (1992), the authors found that on average the taxation of capital gains does not benefit homeowners as the associated increased user-costs are not sufficiently offset by the tax-induced reduction in volatility (Sheffrin and Turner, 2001).

Van den Noord (2003) used the user cost model developed by Poterba (1984 and 1992) in his research on “the *ex ante* impact of income taxation of the real financing costs of owner-occupied housing” in several European countries (Van den Noord 2003, p4). He estimated the tax wedge between market interest rates and the financing cost of owner-occupied housing to the extent affected by the respective countries’ income tax systems (Van den Noord, 2003).

James Poterba looked at the distribution of tax benefits once again³⁷ in his 2008 work with Todd Sinai. They considered the US mortgage interest and real estate tax deductions in contrast with the exclusion of imputed rental income. The authors make the point that mortgage debt is concentrated among younger households, as older households tend to be mortgage-free. The authors concluded that homeowners would face a relatively modest tax increase with the disallowance of the mortgage interest deduction. This is contrasted with the distribution of the real estate tax deduction, which benefits more households (all but those unable to itemize deductions). It was concluded that the distribution of the real estate tax deduction is more closely associated with the distribution of an imputed rental income tax (Poterba and Sinai, 2008).

2.3.5. Multi-national comparisons

The existing literature considers the tax policies of single countries in detail or multiple countries in general. Comparative studies often fall short of true comparative analysis and are more akin to combined essays of two or more countries. What this tends to lack is the in-depth analyses of the specified countries

³⁷ The distribution of homeownership subsidies was considered in Poterba’s 1992 paper *Taxation and Housing: Old Questions, New Answers*.

with comparing and contrasting techniques. A well-recognised issue with multi-national comparative analysis is that the depth of analysis is often compromised for increased breadth. With regard to the reviewed literature specific to owner-occupied housing tax issues, multi-national analyses are more qualitative and far less detailed. Haffner and Oxley acknowledged in their paper “comparisons between countries require detailed knowledge of the fiscal system of each country” (Haffner and Oxley 1999, 160). The tendency is to enlist experts in the respective countries to give an account of the current policies and housing information and present the information in a side-by-side manner.

Haffner (2000) conducted a more detailed analysis of four European countries’ housing subsidies by comparing the one-off and income tax subsidies in percentage terms to the user-cost benchmark. Heisler (1991), Messere (1993), Wood (1990), Haffner and Oxley (1999) gave descriptive historical and political accounts of the owner-occupied housing tax policies in multiple countries. Van den Noord and Heady (2001) discuss housing tax issues very generally in their Surveillance of Tax Policies paper. Various countries’ housing allowances have been compared by Howenstine (1986), Oxley (1987) and Kemp (2007). Van den Noord and Heady (2001) focussed on interest relief in their comparative study. Vlassenko (2001) provided a qualitative review of the efficiency and equity aspects of the property tax systems in three countries. Scallan and Whitehead (2004) looked at the trend of housing markets, subsidies and housing-finance systems in nineteen countries. This was an extension of earlier research undertaken by Freeman *et al* (1996). The methodology was survey based, targeting respective experts within each country. The end result was a general comparison of tenure patterns, the identification of tax policy changes among other descriptive information followed by a collection of individual country summaries.

When the number of countries investigated is small and the issue addressed is narrower one gets nearer to genuine analysis and comparison... The least satisfactory studies suffer from too much diversity of subject matter and lack of a tight organisational framework... The best...is about commonality and differences (Oxley 1991, p68).

In a later publication, Oxley went on to suggest that the housing research that “bridges countries may range from ‘zero’ to ‘high’ in terms of comparative analytical content (Oxley 2001, p90). Descriptive and/or analytical research on a single country for international consideration would be classified as zero. The literature reviewed falling in this category includes but is not limited to Rosen (1980), Poterba and Sinai (2008), Yates (1994) and Ball (1990). The low classification is attributed to research that is descriptive and covers several countries, which applies to Heisler (1991), Messere (1993), and Wood (1990). Haffner (2000) would fall within the middle range according to Oxley’s criteria in that it satisfies the need for a significant level comparison. However, it falls short of the high level of comparative work, which is described as one that systematically examines inter-country similarities and differences, takes an analytical approach with an explicit theory and has a high level of empiricism. Boelhouwer and Van der Heijden (1992) and Feddes and Dieleman (1996) achieve this status according to Oxley (2001, p94).

2.4. Conclusion

The favourable taxation of owner-occupied housing continues to attract scholarly attention and political debate and will undoubtedly do so for the foreseeable future as governments continue to subsidise homeownership. There are two distinct branches of literature recognised within this review: one considers the justification of favourable policies with reference to the positive externalities often attributed to homeownership; the second considers the favouritism within the optimal taxation framework.

It is the author’s position that the argument for favourable homeownership taxation due to positive externalities is weak and in light of the current economic climate, may even be outdated. While there may be some recognisable social benefits from homeownership, there certainly exists a negative side that should no longer be ignored. Setting that aside, the issue remains that particular tax policies, claiming positive externalities as fig leaves, are not achieving their implicit (and often explicit) goal of encouraging homeownership. It is because of the inherent weaknesses in justifying the favouritism of homeowner-occupiers under the Pigouvian tax theory that the author relies on the well-established theory of optimal taxation in this evaluation of the fairness of owner-occupied housing taxation.

What appears to be lacking in the literature is an extensive comparative analysis of the specific owner-occupied housing tax policies and their interrelationship with respect to the complex overall tax system in which they are present. How do two countries with very different approaches to homeowner taxation compare on a detailed, longitudinal basis? How inequitable are they really? And if the time value were recognised in the methodology, would the inequities be as great or greater?

A recurring theme in the literature is that homeowners ought to be taxed as investors in rental properties to ensure tenure neutrality or, alternatively, taxed as any other investor to ensure tax neutrality. Neutrality is therefore assumed to be the primary objective of taxation by the authors, taking precedence over fiscal stimuli based on the externalities. Neutrality and theoretically horizontal equity are both satisfied under such tax regimes. But will such tax measures really improve a given system's horizontal equity? And how is the vertical equity affected? The literature most often presents the solution in theoretical terms without any empirical substantiation.

The aim of this research is to contribute to the middle/high range of comparative analytical work. The research is set within a comprehensive theoretical framework and systematically compares two countries' specific tax policies and their overall impact on the respective personal tax systems. The methodology used is consistent between the two countries, ensuring a robust dual-nation comparison. The next chapter will focus on the specific tax policies and tax systems of the two countries studied, the UK and the US. Chapter 4 (Methodology) will continue to review relevant literature with respect to the methodologies employed.

Chapter 3: Country summaries

The two countries' tax systems and owner-occupied tax policies being analysed in this study are the UK and the US. This chapter provides a general overview of the UK and US tax systems with summaries of the specific homeowner tax policies under current legislation and the reforms relevant to the study's time frame. This includes a brief summary of the respective historical and political contexts of specific tax policies.

3.1. The United Kingdom

3.1.1. Taxes and subsidies for homeowners

Transfer taxation

The UK stamp duty dates back to 1694 during the reign of William and Mary. It was introduced as a temporary source of revenue during the French War, but has remained a significant part of the tax system ever since. Its fiscal appeal has been largely owed to its administrative ease. Most of the revenue currently stems from duties on land transactions and transfers of UK company stock (Legg, 2007).

The duty was originally imposed on the *instrument* produced on transfer, and not the actual transaction or the people involved. This enabled a degree of avoidance over time, which escalated when electronic transfers became the norm. The revenue leakage prompted the legislative reform that bore two new forms of self-assessed transaction taxes: the stamp duty reserve tax (SDRT) in 1986 and the stamp duty land tax (SDLT) in 2003.

Stamp duty and SDRT apply to the transfer of a limited range of assets (e.g. stocks, bonds, etc.). If the transaction yields a paper document, then a stamp is affixed to the document and the duty associated with the stamp is £5 if the consideration is £1,000 or less. If the consideration exceeds £1,000, then a 0.5% ad valorem stamp duty is calculated on the consideration, rounding up to the next £5 increment. If the transaction is paperless, then a 0.5% ad valorem tax (SDRT) is calculated on the consideration, rounding to the nearest penny. The duty on shares and marketable

securities was reduced from one per cent to 0.5% in 1986 and has remained at that level ever since.

The maximum rate of stamp duty on land buildings and other property for more than a decade up to and including 7 July 1997 was one per cent. Before then, the rate never exceeded two per cent in its 300-year history. Since then, the rates on real property transactions have successively increased.

The legislation for SDLT is found within Finance Act 2003, Part 4 with substantial amendments in later finance acts and statutory instruments. Before 2003, the duty associated with land, buildings and other property transactions fell under the stamp duty legislation found within the Stamp Act 1891, with its subsequent finance act amendments. The legislation for stamp duty associated with the conveyance of UK stock and other marketable securities that are evidenced by a paper document is found within the Stamp Act 1891 and the Stamp Duties Management Act of 1891, with subsequent Finance Act amendments. The SDRT legislation is found within the Finance Act 1986, Part 4.

SDLT applies to transfers of land, buildings and other real property, including residential real estate, with consideration above the set threshold (currently set at £125,000). The residential property rates and respective bands as of April 2011 are summarised in Table 3.1.

Table 3.1 Current stamp duty land tax bands on residential property

<u>Relevant Consideration</u>	<u>Non-1st time buyers %</u>	<u>1st time buyers %</u>
Not more than £125,000	0%	0%
£125,001 to £250,000	1%	0%
£250,001 to £500,000	3%	3%
£500,001 to £1,000,000	4%	4%
More than £1,000,000	5%	5%

The applicable tax rate is applied to the entire consideration; it is not a traditionally progressive tax in the sense that different ‘slices’ attract different rates. For

example, if a property sells for £400,000, the SDLT is assessed at 3% totalling £12,000 (£400,000 x 3%). This is referred to as a *slab-tax system*.

At the beginning of this study (April 1990) the relevant SDLT on residential real property was 1% on the value of the property if the total consideration exceeded £30,000. This floor was raised to £250,000 between December 1991 and August 1992 and then lowered to £30,000 again until March 1993 when it was doubled to £60,000. The 1% floor remained at £60,000 for the next twelve years when it was doubled again to £120,000. The following year (March 2006) raised it slightly to £125,000. With the exception of a 15 month ‘tax holiday’ which raised this floor to £175,000 between September 2008 and December 2009, it remains at £125,000.

Higher rates were not applicable between March 1984 and July 1997. Thereafter, the UK SDLT has been charged at progressively higher rates of between 1.5% and 4%. To conclude, the UK acquisition tax system for transfers of land, buildings and property other than stocks and shares has significant structural changes during the time frame studied. Table 3.2 sets out the historical tax rates on such transfers from March 1984 through January 2010.

Table 3.2 Rates of Stamp Duty: Conveyances and transfers of land, buildings and property other than stocks and shares

Commencing Date	Threshold and rates of stamp duty								
	Nil rate	0.50%	1%	1.50%	2%	2.50%	3%	3.50%	4.00%
	Considerations up to:		Considerations exceeding:						
	£	£	£	£	£	£	£	£	£
Mar-84	30,000	-	30,000	-	-	-	-	-	-
Dec-91	250,000	-	250,000	-	-	-	-	-	-
Aug-92	30,000	-	30,000	-	-	-	-	-	-
Mar-93	60,000	-	60,000	-	-	-	-	-	-
Jul-97	60,000	-	60,000	250,000	500,000	-	-	-	-
Mar-98	60,000	-	60,000	-	250,000	-	500,000	-	-
Mar-99	60,000	-	60,000	-	-	250,000	-	500,000	-
Mar-00	60,000	-	60,000	-	-	-	250,000	-	500,000
Dec-03	60,000	-	60,000	-	-	-	250,000	-	500,000
Mar-05	120,000	-	120,000	-	-	-	250,000	-	500,000
Mar-06	125,000	-	125,000	-	-	-	250,000	-	500,000
Sep-08	175,000	-	175,000	-	-	-	250,000	-	500,000
Jan-10	125,000	-	125,000	-	-	-	250,000	-	500,000

Source: HMRC (Table 9A) modified.

Property taxation

Historical background

The *danegeld* and church *tithe* were the immediate precedents of the property tax in England. The Anglo-Saxon *danegeld* introduced in the tenth century was a fixed assessment on a *hide* of land (a hide was defined to be a parcel of land for one family for one year). The proceeds were used for national defence with specific protection against the Scandinavian invaders (“Danes”). The tithe was a fixed percentage (10%) of income. Whilst the *danegeld* was a fixed sum and thus regressive with respect to income, the tithe was a proportional tax (Hale 1985, p 387).

Other early forms of property taxation in England included the *carucage*, *tallage* and *scutage*, all of which were introduced in the twelfth and thirteenth centuries. The *carucage* was another form of taxing a unit of land but on its productivity. The *tallage* was a lump sum tax levied on “towns, vills, and individuals” by royal officers (Benson *et al*, 1965, p18). The *scutage* was a tax paid by knights releasing them from the “forty-day annual service obligation” (Benson *et al* 1965, p18).

These early taxes soon gave way to a more uniform manner of taxation during the Crusades: the “fractional” form of taxation emerged as “fifteenths” (on land and rents) and “tenths” (on movable property).

Later forms of “house taxes” that were introduced with an aim for progression included the hearth-money tax (1662-1668) and the window tax (1696-1851). These proved unpopular and distortive and were repealed on these grounds and for financial failure.

Domestic rates were a locally administered property tax in operation from 1836 (Parochial Assessment Act) until 1989. This form of taxation effectively taxed occupiers on an equivalent net market rental value of the property occupied. It was an *ad valorem* tax on housing expenditure payable by owner-occupiers and tenants alike. Estimates suggested the tax was set fairly high; one such estimate yielded a 28% average tax rate on housing expenditure (Hughes, 1982).

The domestic rates were criticised for being based on “relatively arbitrary and grossly outdated valuations” and for inequitable rates applications among other things. It was argued that updating the existing system was too “cumbersome and administratively costly” and a new system of taxation was called for (Muellbauer 1987, p10). In fact, local taxation had a series of crises over a period of half a century³⁸, so its replacement under the Thatcher government was not surprising.

The *Community Charge (poll tax)* replaced domestic rates in 1989. It was a set tax per adult person, without progression and with very limited relief available. The expressed ideology behind the tax was fairness and efficiency, with “everyone paying their ‘fair share’ in the name of self-reliance and accountability” (Lister, 1990). Contrary to this, the poll tax was seen to be highly regressive and it only lasted for 4 years due to its extreme unpopularity. The current Council Tax, a hybrid tax possessing features of an ad valorem property tax and a poll tax, succeeded it.

Current system (council tax)

The council tax was introduced in the Local Government Finance Act of 1992, Chapter 14, which begins:

An Act to provide for certain local authorities to levy and collect a new tax, to be called council tax; to abolish community charges; to make further provision with respect to local government finance (including provision with respect to certain grants by local authorities); and for connected purposes (Local Government Finance Act of 1992, Chapter 14).

When the council tax was enacted the following year, properties were valued and placed accordingly into one of eight bands (A to H). The local councils determined the taxes payable, where each band represented a specific liability. The banding system enabled a speedy replacement for the failing Community Charge as there was no need for detailed discrete valuations required under a property tax system. The liability falls on the resident whether homeowner or tenant. Theoretically, half the tax is associated with the property and half is associated with the resident (assumed

³⁸ See McConnell (1997), “The recurring crisis of local taxation in post-war Britain”.

to be two adults). Some relief is available for single adults, full-time students and/or low-income households.

While there is a certain degree of local autonomy with respect to the assessed rates, the council tax is a national tax with nationally set bands. Whereas the tax liabilities differ by locale, the variation between the bands is set nationally. For example, a tax liability on property falling within Band H is three times the liability set by Band A, regardless of county. The parameters of the UK council tax bands and the relative tax levels are provided in Table 3.3.

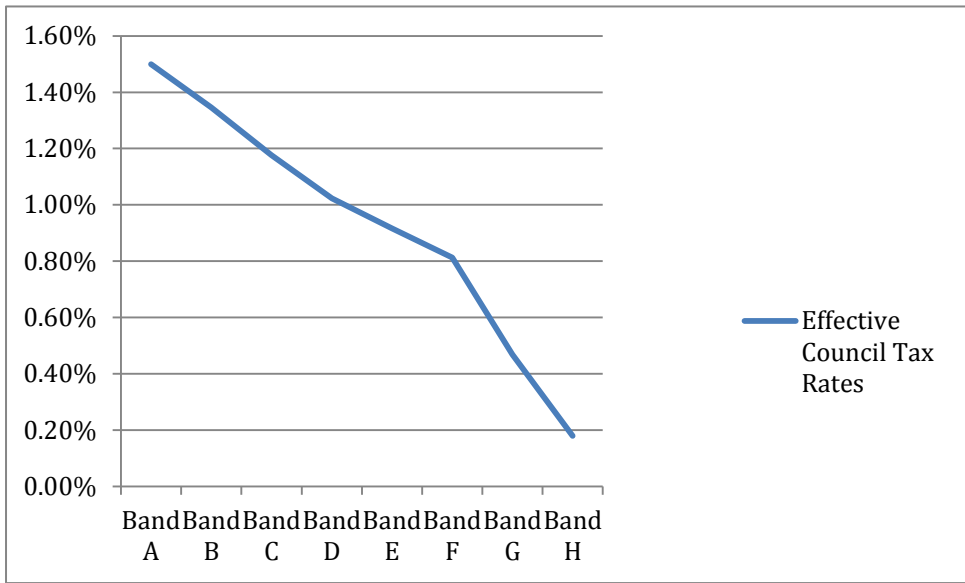
Table 3.3 UK council tax bands: value parameters and relative tax levels

Valuation band	Range of values	Percentage of Band D
Band A	Not exceeding £40,000	66% (6/9ths)
Band B	Exceeding £40,000 but not exceeding £52,000	77% (7/9ths)
Band C	Exceeding £52,000 but not exceeding £68,000	88% (8/9ths)
Band D (“average” band)	Exceeding £68,000 but not exceeding £88,000	100% (9/9ths)
Band E	Exceeding £88,000 but not exceeding £120,000	122% (11/9ths)
Band F	Exceeding £120,000 but not exceeding £160,000	144% (13/9ths)
Band G	Exceeding £160,000 but not exceeding £320,000	166% (15/9ths)
Band H	Exceeding £320,000	200% (18/9ths)

Band D is the “average” tax band to which the local authorities set annual tax liabilities. The liabilities for the other bands are simple functions of this reference amount. Properties in Band A are charged two-thirds (6/9) the level of tax for Band D. Properties in Band H are charged twice (18/9) the level of tax for Band D.

Whilst the council tax introduced a degree of progression into the property tax system as compared with the community charge, it remains a regressive tax. The cheapest property in Band H is eight times the value of the most expensive property in Band A, but the tax liabilities are a difference of three fold. Families in properties worth £350,000, £500,000 and £2 million, respectively, have the same council tax liabilities. Diagram 3.1 depicts the effective tax rates for the most expensive properties in each band (£1 million was assumed for Band H as there is no ceiling) where the tax liability for Band D is set at £900.

Figure 3.1 The effective UK council tax rates assessed at the top of each band (£1 million assumed in band H)



Source: Interest: Y165:AA185

For purposes of this research, one local authority’s rates are assumed. The historical rates of the East Dorset District Council are used as they are deemed to be a fair representation of the country’s average level of taxation.

Mortgage interest relief

Before 1974/75 mortgage interest tax relief (MITR) had been available on qualifying³⁹ loans of any size secured by property located in the UK. Relief was

³⁹ It was available on loans for (1) the purchase of property to be used as the main residence; (2) the improvement of such property if taken out before April 1988; (3) the purchase of a house for a

predominantly given through the Mortgage Interest Relief at Source (MIRAS) scheme where the borrower paid interest net of the tax relief to the lender. Otherwise, the relief would be given in the borrower's PAYE coding or assessment, or by repayment.

In 1974/75 a ceiling of qualified indebtedness was introduced of £25,000. This ceiling was raised to £30,000 in 1983/84, well below the rate of housing appreciation and general inflation at the time. The effect of these two caps was to significantly reduce the real value of the subsidy.

Initially the amount of relief was available at the taxpayer's marginal tax rate. The real value of the subsidy was further eroded by a series of rate restrictions introduced in the 1990s. From 1991/92 through 1993/94 the rate of relief was limited to the basic tax rate of 25%. In 1994/95 this was reduced to 20%, followed by a limit of 15% from 1995/96 through 1997/98, and finally 10% from 1998/99 through 1999/00 when the relief was finally abolished. The withdrawal of MIRAS had no discernible ill effect on the UK housing market, as a result of the extended period of withdrawal (25 years) coupled with the low interest rates of the 1990s. In fact, the housing market sustained a continual and significant rise during this period. MITR disappeared in the UK with a whisper.

Capital gains taxation (and relief)

The Taxation of Chargeable Gains Act 1992 (TCGA 1992) section (s) 222 provides an exemption from CGT for any gain arising from an individual's disposal of his/her only or main residence, including grounds of up to the permitted area (usually limited to half a hectare).

If a taxpayer has more than one residence, the exemption is available for the main residence only. The taxpayer may elect which of the two (or more) residences is to be treated as the main residence under TCGA 1992 s 222(5). The election can be backdated for up to two years to the date of acquiring the subsequent property and can be varied at any time. If an election is not made, the self-assessment tax return

dependant relative or divorced or separate spouse of the borrower; (4) the purchase of a life annuity where the annuitant is aged 65 or older.

has to resolve the question on the basis of facts, which may not be as simple as proportioned residency.

The courts have established two tests for consideration when defining ‘residence’ with respect to a home with additional accommodation available for staff or aged relatives: *the entity test* (Batey v Wakefield (1982)) and the curtilage test (Markey v Saunders (1987) and Lewis v Rook (1992)).

Relief is subject to a distinction between a permanent residence and a temporary accommodation. Where there is a pure profit motive the exemption will not be allowed in accordance with s 224(3). The intention of the taxpayer at the time of the acquisition is central to the availability of relief. Finally, the principal residence exemption may be disallowed or restricted in certain situations including properties partially and exclusively used for business⁴⁰, some residential lettings⁴¹ and certain periods of absences⁴² not otherwise permitted⁴³.

3.1.2. General income tax summary

Tax unit

Since 1990/91 (fiscal year), the tax unit has strictly been the individual. Before that, income was aggregated for married couples and until 1972/73 included the income of unmarried infants.

⁴⁰ If part of the house is used exclusively for business purposes, a proportionate part of the gain on disposition is chargeable to CGT. Rollover relief may be available if criteria are satisfied.

⁴¹ “Where the whole or part of the property has been let as residential accommodation this may result in a partial loss of exemption. However, the gain attributable to the letting (calculated according to how much was let and for how long) will be exempt from CGT up to the lesser of £40,000 and the exemption attributable to the owner’s occupation” (Lee, 2007, p566).

⁴² The effect of disallowed periods of absences on capital gain is that a proportion of the gain is chargeable. A simple formula is used to determine that proportion: Total Gain x (period of absence / period of ownership).

⁴³ Allowable periods of absences include the first 12 months and the last three years of ownership, any period(s) not exceeding three years altogether, any period when the taxpayer was employed abroad, and a maximum period of four years where the owner could not occupy the property because he was employed elsewhere (TCGA 1992 s 223).

Income subject to income taxation

UK legislation does not define taxable income but specifies that unless it is exempt in statute or case law, it is taxable. It is the sum of all income calculated under the Income Tax (Employment and Pensions) Act (ITEPA) 2003, the Income Tax (Trade and Other Income) Act (ITTOIA) 2005 and Income Tax Act (ITA) 2007. Taxable income includes earnings from employment and self-employment, most pension income, interest and dividends on most savings investments, rental income and trust income. Income from rental real estate is taxable while there is no taxation of imputed rental income on owner-occupied housing.

Income is categorised as non-savings, savings and dividend income as different rules of assessment and tax rates apply. Before 6 April 2008, capital gains were taxed at the income tax rates applicable to savings income.

Income from rental real estate properties

Rental income may be offset with allowable rental expenses. Allowable expenses include mortgage interest expense, maintenance, advertising, agency and professional fees, et cetera. Deductibility depends on the expenses satisfying the “wholly and exclusively for business purposes” test and that they are not capital in nature. There is no provision within UK legislation to deduct the cost of the investment property itself (i.e. depreciation⁴⁴).

Net income is taxed at the rates applicable to non-savings income. Generally, the losses derived from rental properties are not available to offset other income.⁴⁵ They are suspended and carried forwarded indefinitely. They may then be used against future profits of the *same* property (ITA 2007 ss 118-119⁴⁶). The losses of one property may not be used to offset rental income realised in the same period from another property. In other words, such losses are “ring fenced”. Any losses not yet utilised at the time of disposition are lost.

⁴⁴ Section 308A of ITTOIA 2005 provides for a ‘wear and tear allowance’ for furnished lettings.

⁴⁵ Three exceptions to this general rule are with regard to claims to capital allowances, furnished holiday letting and ‘agricultural expenses’ in connection with the management of an agricultural estate.

⁴⁶ For losses incurred between tax years 1995/96 and 2007/08, see Income and Corporations Tax Act (ICTA) 1988 s 379A.

Capital gains

In order for there to be a capital gains tax liability, there must have been a *chargeable person* making a *chargeable disposition* of a *chargeable asset* (Lymer and Oats, 2009/10, p278). If such is the case, the gain is the net result of the sales proceeds (net of any incidental costs on disposal) less the allowable costs.

An *indexation allowance* was introduced with the 1992 Taxation of Chargeable Gains Act (TCGA) in order to alleviate capital tax burdens by excluding inflationary gains. Before this, both inflationary and real gains were subjected to capital gains taxation. The elements of allowable expenditure (i.e. acquisition costs, improvements, etc.) were index linked (to rises in the Index of Retail Prices, or RPI), so that the eventual gain realised on disposal reflected only the 'real' gain (see TCGA 1992 ss 53-57).

The RPI for the month(s) of purchase and/or investment is compared with the RPI relevant to the month of disposal and if the index has increased, the allowable expenditure is multiplied by a fraction $((RD - RI)/RI)$ where RD is the index at the time of disposal and RI is the index at the time of investment (or March 1982, if later). The fraction, rounded up to three decimal places, produces an index rise that then determines the associated indexation allowance for the respective investment. The allowance is a further allowable deduction in arriving at the chargeable gain (Farley, 2007).

The indexation allowance was abolished for individuals from April 1998 and was then superseded with *taper relief*. Capital assets purchased before and disposed of after April 1998 still qualified for indexation relief for the period of time from the purchase or investment until April 1998. Such disposals may also have qualified then for taper relief.

Taper relief was available on relevant assets purchased after 6 April 1998 and before 5 April 2008, when it was also abolished. For individuals⁴⁷, any disposals after 5 April 2008 no longer qualified for taper relief or the indexation allowance.

⁴⁷ Indexation allowance is still available for corporations in calculating chargeable gains.

Capital gains were eligible for taper relief if they were held for a minimum qualifying period, which was three years for non-business assets. The relievable gain was multiplied by a statutorily set percentage relative to the holding period. TCGA 1992 s 2A(5) is reproduced in Table 3.4.

With regard to the assets held for sale in the micro-simulations of this research, shares in a trading company or the holding company of a trading group qualify as a business asset for purposes of determining taper relief. However, an investment in rental real estate is deemed a non-business asset.

Table 3.4 Taper relief as per TCGA 1992 s 2A(5)

<i>Gains on disposal of business assets</i>		<i>Gains on disposal of non-business assets</i>	
<i>Number of whole years in qualifying period</i>	<i>Percentage of gain chargeable</i>	<i>Number of whole years in qualifying period</i>	<i>Percentage of gain chargeable</i>
1	92.5	-	-
2	85	-	-
3	77.5	3	95
4	70	4	90
5	62.5	5	85
6	55	6	80
7	47.5	7	75
8	40	8	70
9	32.5	9	65
10 or more	25	10 or more	60

Source: TCGA 1992 s 2A(5)

The effect of taper relief was to reduce the chargeable element of the gain. For example, the gain on disposal of a non-business asset held for 5 years would be 85% chargeable (i.e. 15% relieved).

An annual exemption (adjusted each year for inflation) is available to all chargeable persons and only the chargeable gains in excess of the exemption amount are taxable (TCGA 1992 s 3). As with income taxation, spouses and civil partners are separate taxable persons and are treated as such for capital gains tax purposes. Accordingly, each is entitled to his/her own annual exemption to offset chargeable net gains. For

the tax year 2009/10 the exemption is £10,100 (FA 2010 s 8 (1)). Any unused exemption by one is not transferable to the other spouse.

The rates of tax applied to the taxable gain were those applicable to savings income until FA 2008 s 8(1) stipulated an 18% flat rate of tax effective from 2008/09 onwards. Before FA 2008, capital gains were considered the top slice of income in order to correctly apply the tax rates.

ITA 2007 s 836 provides a general rule for assets owned jointly by married taxpayers who live together in that a fifty/fifty allocation is assumed unless a declaration for another split is made under ITA 2007 s 837⁴⁸. This allocation applies to both income and gains recognition. Such a provision results in the corresponding gain from shared property being split between two taxpayers and offset by their own individual annual exemption, thus reducing or even eliminating taxable gains. Certain exceptions to this general rule were recognised in 2004/05 and subsequent years, including shares in a close company and property held in the name of one party only.

TCGA 1992 s 58 allows for the transfer of an asset from one spouse or partner to the other without gain or loss recognition. This effectively defers any gain recognition until the ultimate disposal as the recipient spouse assumes the basis of the donor spouse.

Allowances and exemptions

Personal allowance (ITA 2007 s 35)

All taxpayers resident in the UK (including minor children) are allowed the standard personal allowance. Additional allowances may be claimed with respect to age (age allowance) and sight disability (blind person's allowance). The married couple's allowance is being phased out but still available for taxpayers born before 6 April 1935.

The personal allowance can offset any form of income (i.e. non-savings, savings, dividends and capital gains). Any unused allowance is not transferable to another taxpayer and cannot be carried forward to another tax year (i.e. the surplus allowance

⁴⁸ Preceded by Section 282B ICTA 1988.

is lost). The allowance is adjusted each year for inflation. The personal allowance for 2009/10 is £6,475.

Charges to income

Total income may be reduced by certain charges including eligible interest expense, and copyright and patent royalties. In addition, deductions may be allowed for certain employment expenses, contributions to pension funds and charitable donations.

Tax credits

The working tax credit and child tax credit are available to qualified individuals but are separately administered and not obtained through self-assessment.

Taxable income

Total income less charges yields statutory taxable income (STI). STI less personal allowances yields total taxable income. Distinction with regard to income category is maintained as the tax rates vary.

Tax rate structure (ITA 2007 s 6-8)

In 2009/10 there are 2 levels of taxation⁴⁹ referred to as tax bands (i.e. the basic rate band and the higher rate band) with regard to non-savings income. The three categories of income (non-savings, savings and dividends) determine the applicable tax rates ranging from 10% to 40% (32.5% for higher-rate dividend income).

3.2. The United States

3.2.1. Taxes and subsidies for homeowners

Real estate transfer taxation

The federal government does not impose an acquisition tax (stamp duty) on real and/or personal property transfers. Thirty-five of the fifty states however, assess an *ad valorem* tax on such transactions that is referred to as a real estate transfer tax or

⁴⁹ This ignores the nil-rate band with respect to the personal allowance, applicable to the very low-income earners.

deed recordation tax. These assessments are on the value of the property, and a set flat rate of tax varying from .01% (Colorado) to 2.2% (District of Columbia). The majority of states (two-thirds) fall below 0.5% and only seven states assess at a rate equal to or greater than 1%. Whether the tax is legally imposed on the buyer or the seller is a matter for the state legislature.

For purposes of this research, a 0.05% transaction tax is assumed incurred on the acquisition of residential real property by the acquiring party. No such charge is assumed to be incurred on the acquisition of company shares or other investments (i.e. personal property).

Property taxation

Historical background

The property tax system in the US was initially modelled on the English system in that it was designed to tax ability and was administered by local juries or boards of assessors (Hale 1985, p394). Initially the tax was levied on specific properties on a per item, per acre or per head basis which caused conflicts within the legislative bodies and in certain cases led to tax revolt. In the early nineteenth century, the states incorporated 'uniformity and universality' in their respective tax codes, thus developing a more democratic form of taxation in that same rates would be applied to all properties deemed taxable and the property assessments would be objective. The uniformity clauses did not stipulate that all property should be taxed, but whatever property was to be taxed would be taxed at an equal rate. This was the origin of *ad valorem* property taxation in the US.

Characteristics underpinning the original general property tax in the US (theory):

- *Uniformity – all property in a tax district must be valued and taxed alike.*
- *Ad valorem – taxation is on the basis of value.*
- *Universality – tax is applied to all property (real and personal, tangible and intangible).*

- *In rem – the tax is levied against the thing, not in personam (against the owner).*
- *Tax Day – the tax is levied on the property at the place and at the value on a specific day.*

(Fisher 1996, p10-11)

Robert Becker (1980), in his comprehensive study of colonial and state taxation during the Revolutionary War, stated:

Men should be taxed in proportion to their ability to pay: by 1763 this had become so self-evident a truth that few public men dared to deny it (cited in Fisher 1996, p13).

The property tax was decentralised from states to municipalities during the Depression with the general collapse in land values (Hale 1985, p395).

Current system (real estate tax)

Taxes on real estate in the US are administered at the local government level. Within each state there are several counties and within each county there are several cities and municipalities that determine the property tax rates and certain exemptions. There are more than eighty-two thousand units of local government and the bulk of property tax collection occurs in eighteen thousand cities and towns (Hale p15, 1985).

Most jurisdictions apply a flat rate percentage to the assessed residential property value and do not differentiate between land and structure. There are exceptions to this general application in certain states where graded or split rates of tax are applied. In Pittsburgh and several other Pennsylvanian cities land is taxed more heavily than the structures. Beyond Pennsylvania the exceptions include Amsterdam, New York; Fairhope, Alabama; and Arden, Delaware. Otherwise, it is common practice for the cities and municipalities to determine a flat rate of tax sufficient to finance the local budget. In addition to the ad valorem tax, certain charges may be added to cover utilities and school fees.

The national averages according to the last two censuses were 1% and 1.1%. For purposes of this research, the historical rates, concessions and assessment criteria of a representative state and locale are assumed. The State of Maryland is deemed to be a fair representation of the country's average property tax system.

Mortgage interest and real estate tax relief

The first income tax in the US was enacted in 1861 for the purpose of financing the Civil War. When it expired in 1872, income taxation did not re-emerge until the adoption of the Sixteenth Amendment and the installation of the 1913 Internal Revenue Code (IRC).

Mortgage interest and real estate tax deductions were specifically provided for in the Civil War income tax and its 1913 successor. There was no attempt to limit the application of benefits until the Tax Reform Act of 1986 (TRA'86).

TRA'86 limited the deductible interest on mortgages acquired after October 13, 1986 to \$1 million (\$500,000 for *married filing separately (MFS)* taxpayers) for acquisition indebtedness (IRC⁵⁰ § 163(h)(3)(B)). Interest on secured debt used for other purposes (*home equity loans*) is deductible to the extent that the debt does not exceed \$100,000 (\$50,000 MFS) or the fair market value of the home less its acquisition and grandfathered debts (IRC § 163(h)(3)(C)).

The real estate tax deduction has never been specifically restricted, but the *Alternative Minimum Tax (AMT)*⁵¹ targets this allowance.

To benefit from the relief provisions for mortgage indebtedness and real estate taxation, the taxpayer(s) must *itemize*⁵² their deductions.

Capital gains taxation (and relief)

The principal residence is a capital asset and may attract capital gains tax accordingly. In 1951 the provision for the deferred recognition of a taxable gain on the sale of a principal residence was installed. The restrictions were a two-year reinvestment period and the investment in a home of equal or greater value. The

⁵⁰ Current US legislation is with reference to the Internal Revenue Code of 1954.

⁵¹ This mechanism is discussed in full in the following section (3.2.2.) of this chapter.

⁵² This mechanism is discussed in full in the following section (3.2.2.) of this chapter.

reinvestment time frame ran from two years prior to and two years subsequent to the sale of the principal residence. This time frame may have been suspended up to an additional two years if the taxpayer's *tax home* moved abroad at any time before the end of the two-year replacement period. A tax home is defined as the place in which the taxpayer lives and works, regardless of where the family resides. The total time allowed for reinvestment would then be limited to four years from the date of sale (two years suspension and two years for reinvestment).

Since 26 July 1978 a one-time exclusion provision for gains on the sale of a principal residence was available until its repeal 6 July 1997 (IRC § 121). To qualify for this exclusion the following criteria must have been met:

- Age – the taxpayer must have been at least 55 years old on the date of disposition (IRC § 121(a)(1));
- Occupation – the home sold must have been occupied as the main residence by the taxpayer for at least three of five years prior to the sale (IRC § 121(a)(2));
- Ownership – the home sold must have been owned by the taxpayer for at least three of five years prior to the sale (IRC § 121(a)(2)).

As the name implied, this exclusion may have only been claimed once, and therefore any unutilised exclusion would have been lost.

TRA'97 introduced IRC § 121, an income exclusion of realised capital gain up to \$250,000 (\$500,000 for *married filing jointly* (MFJ) taxpayers) where ownership and occupation criteria are met with respect to a principal residence. This superseded the once-in-a-lifetime exclusion available for taxpayers aged 55 and older and the deferral rules under IRC Section 1034 previously applicable. With the exception of the 2-year waiting period there is no limit on the number of times the exclusion may be claimed. To qualify for exclusion under IRC § 121 the taxpayer(s) must satisfy the following two tests:

- Test 1 – the taxpayer(s) must have **owned** and **used** the home as the main home during at least 2 of the 5 years preceding the sale; and

- Test 2 – the taxpayer(s) must not have qualified for another exclusion within the 2 years preceding the sale.

If one or both tests were compromised by certain recognised circumstances, allowance may be made so the right to exclusion is not entirely lost. Exceptions to these rules include mental or physical impairment, the home was destroyed or condemned, and foreign deployment of uniformed service personnel. A special rule then applies under IRC § 121(d).

This tax reform favours individuals downsizing and moving to less expensive locales and disfavours individuals realising gains in excess of the allowable exclusions (such individuals may have been able to defer tax recognition under IRC Section 1034). The level of exclusion simplifies the compliance burden in that the need to maintain detailed records of changes in basis from capital improvements is not necessary for the majority of taxpayers.

The exclusion is denied if the home is acquired in a like-kind exchange in which all or part of the gain was not recognised and the sale occurs within 5 years following its acquisition (IRC § 121 (d)(10)). Special rules apply in determining the eligible exclusion when part of the home is used in trade or rented and/or if the home is not considered the main home any time after 2008.

In determining the taxable capital gain of real property including the principal residence, the transfer taxes paid on purchase, assessments for local improvements not otherwise deductible as real estate taxes and corresponding sales taxes on improvements increase the adjusted basis of the property and thus reduce the taxable gain (i.e. the taxes are capitalised into the value of the property). These are in addition to any capital improvements made to the property.

Before the reform under TRA '97, taxpayers wishing to downsize on retirement, realising a significant capital gain on the sale of the family home, would utilise the one-time exclusion with the possibility of a residual gain being deferred under IRC § 1034. To illustrate this tax planning technique, consider the sale of a family home for \$500,000 with a basis of \$225,000. The capital gain realised on disposal is \$275,000 of which \$125,000 is excluded under the prior §121 legislation. This

leaves a potential taxable gain of \$150,000 (\$275,000 - \$125,000). If the taxpayers timely reinvested at least \$375,000 (\$500,000 - \$125,000) into another home, the gain would be entirely deferred under the former IRC §1034. However, any reinvestment value below \$375,000 would trigger immediate capital gains taxation for the difference. For example, if the replacement property were purchased for \$350,000, capital gains of \$25,000 (\$375,000 - \$350,000) would be taxable. Under the current §121 legislation, married-filing-joint taxpayers are able to exclude the entire \$375,000 capital gain.⁵³

3.2.2. General income tax summary⁵⁴

Tax unit

The tax unit in the US may be an individual, a married couple, or the family. (Dependent children with only interest and dividend income meeting certain other criteria may have their income reported on their parents return.) The filing status available to US taxpayers are single, married filing jointly (MFJ), married filing separately (MFS), head of household, and qualifying widow(er) with a dependent child. The filing status determines the level of exempt income, the standard deduction, certain thresholds, and the applicable tax rate schedule.

Income subject to taxation

Gross income is defined in IRC § 61. It includes but is not limited to wages and salaries, bonuses, self-employment income, interest and dividends, pensions and annuities, social security, and other income. Income from rental real estate is taxable while there is no taxation of imputed rental income on owner-occupied housing. Taxable income is reported in Part 1 of Form 1040, on lines 7 through 23.

Part 2 (Lines 25 – 37) of Form 1040 report certain allowances available to reduce gross income to the *adjusted gross income (AGI)*, which is defined under IRC § 62.

⁵³ The reader is referred to the Internal Revenue Service's Publication 523 (Selling Your Home) for a detailed consideration of the current legislation regarding the sale of the main residence: <http://www.irs.gov/pub/irs-pdf/p523.pdf>

⁵⁴ The reader is referred to the Internal Revenue Service's Publication 17 (Your Federal Income Tax for Individuals) for an more in depth look at the current legislation on income (Part 2), standard deduction and itemized deductions (Part 5) and the alternative minimum tax (Part 6): <http://www.irs.gov/pub/irs-pdf/p17.pdf>

These include contributions to traditional individual retirement accounts (IRAs), allowable moving expenses, alimony, and certain education expenses.

Income of rental real estate properties

Rental income net of allowable expenses is taxable at general income tax rates and reported on Schedule E of Form 1040. Allowable expenses include qualified mortgage interest, real estate taxes, advertising, legal and professional expenses, commission, maintenance and depreciation. Depreciation is allowed at the Modified Accelerated Cost Recovery System (MACRS) with a rate of 3.636%, which is the equivalent to depreciating the property using a straight-line method over 27.5 years.⁵⁵

Generally, losses from rental activities (which are almost⁵⁶ always considered *passive losses*) are limited to offsetting income from other passive activities. A passive activity is one in which the taxpayers do not *materially participate* in any rental activity (with the aforementioned exception). However, losses realised on rental activities in which the taxpayers *actively participate*⁵⁷ may be allowed against general income subject to limitation under the passive activity loss rules of IRC § 469. Active participation requires at least a 10% ownership in the property and the assumption of management decisions including approving new tenants and rental terms, approving expenditure, et cetera.⁵⁸

If the taxpayer(s) are deemed to participate actively in the rental activities, losses up to \$25,000 are allowed to offset general income if the modified adjusted gross income (the adjusted gross income excluding the allowable rental loss)⁵⁹ is lower than \$100,000. For those taxpayers with modified adjusted gross income (MAGI) in

⁵⁵ The reader is referred to Part 2 of the Internal Revenue Service's Publication 527 (Residential Rental Property) for a detailed explanation of the depreciation of rental properties: <http://www.irs.gov/pub/irs-pdf/p527.pdf>

⁵⁶ The exception to this general rule is with regard to individuals involved in the rental real estate profession. To qualify for this exception more than half of the personal services performed in the year must be with regard to real property trade or business and more than 750 hours were spent in such occupation. Material participation is also required.

⁵⁷ Active participation is less stringent than material participation.

⁵⁸ The reader is referred to Part 3 of the Internal Revenue Service's Publication 527 (Residential Rental Property) for a detailed explanation of rental loss limitation: <http://www.irs.gov/pub/irs-pdf/p527.pdf>

⁵⁹ Other modifications include taxable social security benefits, deductions to IRAs, and others which are not relevant to this case study.

excess of \$100,000, the losses are phased out until disallowed entirely when MAGI exceeds \$150,000. The way in which the allowable losses are calculated between \$100,000 and \$150,000 is equal to 50% of the difference between \$150,000 and the MAGI. The disallowed losses are suspended and available to offset future rental income.

On the disposition of a rental property, any unutilised losses at the time of disposition are fully realised against general income. Also, if the sale results in a gain, the portion of the gain that is attributed to previously claimed depreciation is reported as ordinary income and taxed at 25% (unless the taxpayer's marginal income tax rate is less than 25%). Further, alternative minimum tax may apply where the accelerated depreciation has been claimed as an adjustment for the difference in MACRS and AMT depreciation is made.

Capital gains (IRC § 1201)

Capital gains are subject to taxation at reduced rates without indexation and are reported in the income tax return on Schedule D. The sale or trade of a capital asset results in a capital gain or loss. A capital asset includes almost everything held for personal purposes, pleasure or investment including the principal residence and other real estate. An individual's capital gains tax (CGT) liability is the product of the tax rate (as determined by the asset's classification and holding period, and the taxpayer's marginal income tax rate) and the taxable capital gain. The taxable capital gain is calculated as the excess adjusted sales proceeds over the adjusted basis of the property sold. The gain realised from an investment property may be deferred in a like-kind exchange if all criteria are met. The principal residence has an exemption allocation as discussed earlier in this chapter under Section 3.2.1.

Capital gains are taxed at 15% for those taxpayers for whom their regular (marginal) income tax rate is 25% or higher. Capital gains are taxed at 0% for those with marginal tax rates on general income below 25%.

Information extracted from the US micro-simulation is offered as an illustration of the application of regular and capital gains tax rates. In 2009, the taxable income of the highest tiered alternative investor (US-A5) is \$372,430, of which \$130,536 is from capital gains. For taxable income between \$208,850 and \$372,950, 33% is

applied with a \$22,179 subtraction from the product. Given this information, the tax liability for US-A5 may be determined in the following 4 steps:

Step 1 – multiply the capital gain by the applicable rate (15% as the given taxable income has a marginal tax rate of 33%):

$$\$130,536 \times 15\% = \$19,580$$

Step 2 – subtract the capital gain from the taxable income to derive the ordinary income to which the income tax rates will apply:

$$\$372,430 - \$130,536 = \$241,894$$

Step 3 – multiply the remaining (ordinary) income by the applicable income tax rates and subtract the relevant amount to apply graduated tax rates:

$$(\$241,894 \times 33\%) - \$22,179 = \$57,646$$

Step 4 – add the two taxes together to derive the total tax liability:

$$\$19,580 + \$57,646 = \$77,226^{60}.$$

Capital losses are allowed to offset capital gains plus \$3,000 (MFJ) of ordinary income per annum under IRC § 1211. Any unutilised losses are carried forward for use in a subsequent year(s), subject to the net gains and \$3,000 limitation (IRC § 1212(b)).

Allowances and exemptions

Personal exemptions and exemptions for dependent children

There are two types of exemptions available of equal worth but with different rules. First of all, separate and equal personal exemptions are available for the taxpayer and the spouse. These are *personal* exemptions in that a spouse is never considered a dependent. In addition to these, one exemption amount is available for each

⁶⁰ These steps are reflected in W13 of Appendix VIII, page 740.

The reader is cautioned that this is not the final tax liability as determined under the micro-simulation. The Alternative Minimum Tax (AMT) applies, given the high level of taxable income. The AMT is calculated to be \$86,911. This is substantiated in a subsequent section of this chapter.

dependent (qualifying child or relative) when three dependency tests are satisfied.

The three tests are:

- Dependent taxpayer test – the taxpayer and spouse cannot be claimed as dependents to another US taxpayer.
- Joint return test – the dependent cannot be claimed if he/she files a joint US income tax return.
- US citizen or resident test – the otherwise qualified dependent cannot be claimed unless they are a US citizen, a US resident alien, US national or a resident of Canada or Mexico.

Separate tests are used to determine the qualified status of the child or relative including the relationship test, age test, support test, residency test, gross income test, et cetera.⁶¹

The personal exemptions are adjusted annually and are currently set at \$3,650 (2009). Personal exemptions are phased out for the higher income earners. For married filing jointly taxpayers with adjusted gross income in excess \$250,200 in 2009, a reduction in exemptions applies. That reduction is equal to one-third of 2% for every \$2,500 (or part thereof) in excess of the set amount, but cannot be reduced by more than 1/3 of the exemption (i.e. \$2,433).

Information extracted from the US micro-simulation is offered as an illustration of the personal exemption phase out. In 2009, the adjusted gross income (AGI) of the highest tiered homeowner (US-H5) is \$263,026. Four personal exemptions are claimed for a total before reduction of \$14,600. There are four steps in determining the allowable deduction for exemptions, given this information:

Step 1 – subtract the threshold amount from the AGI and then divide the residual income by \$2,500, rounding up to a whole number:

$$(\$250,200 - \$263,026) / \$2,500 = 6 \text{ (rounded up)}$$

⁶¹ For a full discussion on these criteria the reader is referred to Publication 17, Exemptions for Dependents (pages 28 – 38) at <http://www.irs.gov/pub/irs-pdf/p17.pdf>.

Step 2 – multiply the amount determined in the previous step by 2% and apply the determined percentage to the total personal exemptions:

$$6 \times 2\% \times \$14,600 = \$1,752$$

Step 3 – multiply the amount determined in Step 2 by 1/3 to determine the amount by which the personal exemptions may be limited:

$$\$1,752 \times 1/3 = \$584$$

Step 4 – subtract the lesser of the amount determined in Step 3 or 1/3 of \$3,650 or \$1,217 from the personal exemptions to determine the limited deduction for exemptions allowed:

$$\$14,600 - \$584 = 14,016^{62}$$

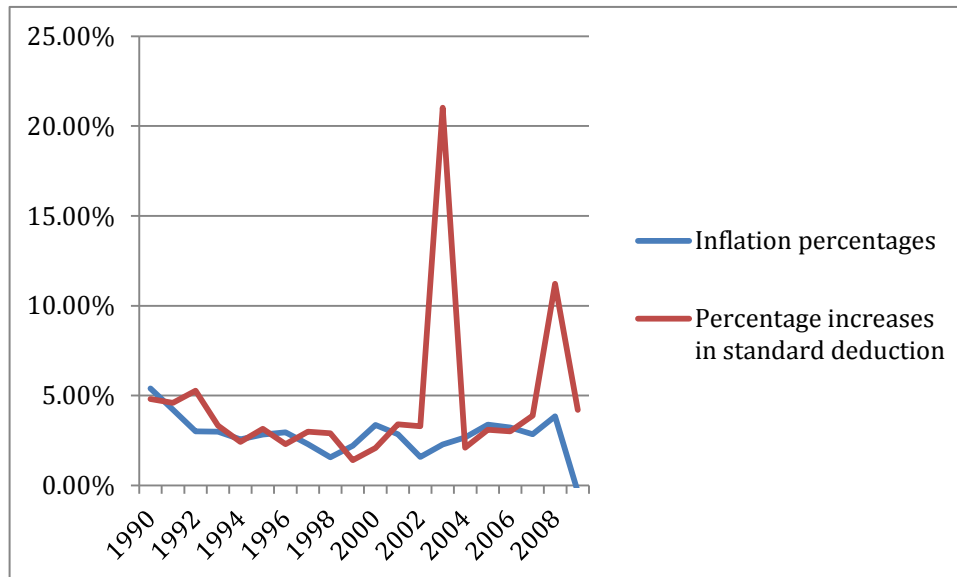
Standard deduction

A deduction from adjusted gross income (AGI) is available for most taxpayers (unless specifically not eligible) and determined by the filing status and age of the taxpayer(s) and whether the personal exemption of the taxpayer may be claimed by another. The standard deduction may be claimed when the taxpayer(s) does not itemize deductions. Most taxpayers have the choice of either the standard deduction or itemized deductions and should choose whichever method yields the lowest tax. The standard deduction available in 2009 to married filing jointly taxpayers is \$11,400.

The standard deductions increase on an annual basis, sometimes bearing no relation to inflation. The average inflation rate for the twenty-year period studied was 2.8. The standard deduction increased, on average, 4.5% for the same period. This average does not adequately convey the significant increases in the standard deductions that occurred in 2003 and 2008. For the married filing jointly taxpayers, there was a 21.0% and an 11.2% increase from the previous years, respectively. The percentage increases in the standard deductions for MFJ taxpayers are set next to the annual inflation rates in Figure 3.2.

⁶² These steps are reflected in W12 of Appendix VIII, page 740

Figure 3.2 Increases in the US standard deductions in percentage terms set alongside the inflation percentages applicable in the US during the period 1990 to 2009



Source: Worksheet VIII (US Case Studies), A289:C308

The intention of significantly increasing the standard deductions in 2003 and again in 2008 was to reduce the number of taxpayers itemizing their deductions, which in turn would simplify tax compliance matters for the majority of taxpayers.

Beginning in 2008, taxpayer(s) who had incurred real estate tax expense but are unable to itemize their deductions may increase their standard deduction by the lesser of the real estate taxes paid, or \$1,000.

Itemized deductions

If the taxpayers' specific, allowable deductions exceed the statutorily set standard deduction⁶³, they may be itemized and deducted in lieu on Schedule A of Form 1040. The allowed deductions under IRC § 161 include:

- certain medical and dental expenses in excess of a 7.5% of AGI;
- certain state and local taxes, general sales tax in lieu of state and local income taxes, state, local and foreign real estate taxes and state and local personal property taxes;

⁶³ Or the taxpayer(s) are not eligible to claim the standard deduction because of residency issues.

- qualified home mortgage and investment interest;
- qualified charitable contributions;
- non-business casualty and theft losses;
- employee business expenses and work related education; and
- miscellaneous (may be subject to a 2% AGI floor).

Certain itemized deductions may be subject to further limitation when AGI exceeds certain levels (\$166,800, MFJ in 2009). The itemized deductions not subject to limitation are medical and dental expenses, investment interest, casualty and theft losses on personal use and income-producing properties and gambling losses. All other itemized deductions may be limited. When such a limitation applies, the total itemized deductions are reduced by the lesser of the following reduced by 2/3s:

1. 80% of the itemized deductions subject to the limitation; or
2. 3% of the excess amount by which the AGI exceeds the set level (\$166,800 MFJ in 2009).

Information extracted from the US micro-simulation is offered as an illustration of the itemized deductions phase out. In 2009, the adjusted gross income (AGI) of the highest tiered homeowner (US-H5) is \$263,026. The itemized deductions before limitation are \$29,381, which comprises real estate taxes of \$8,530, mortgage interest expense of \$15,591 and charitable deductions of \$5,260. There are three steps in determining the allowable itemized deductions, given this information:

Step 1 – subtract the AGI from the threshold amount, then multiply the difference by 3%, the 1/3:

$$(\$166,800 - \$263,026) \times 3\% \times 1/3 = \$962$$

Step 2 – multiply the total amount of itemized deductions that can be reduced by 80% and then 1/3:

$$\$29,381 \times 80\% \times 1/3 = \$7,835$$

Step 3 – subtract the lesser of the two amounts calculated in the previous two steps from the itemized deductions to determine the limited amount allowed:

$$\$29,381 - \$962 = \$28,419^{64}$$

Taxable Income

Taxable income is equal to the adjusted gross income (AGI) less the standard deduction or allowable itemized deductions and the total allowable personal exemptions, with respect to any limitations set on the itemized deductions and personal exemptions.

With continued reference to 2009 US micro-simulation for the highest tiered homeowner (US-H5), given the reductions in the itemized deductions and personal exemptions as just illustrated, the taxable income calculated is as follows:

Adjusted Gross Income	\$263,026
Less: Itemized Deductions (limited)	28,419
Less: Personal Exemptions (limited)	<u>14,016</u>
Taxable Income ⁶⁵	<u>\$220,591</u>

Tax rate structure

In 2009 there are 6 rates of taxation⁶⁶ ranging from 10% to 35%. The applicable structure of taxation is determined by filing status. Most taxpayers simply use the tax table or rate schedule provided. However, if capital gains are included in the taxable income, then a special method of calculating the tax obligation applies and the tax is computed on Schedule D of Form 1040. This ensures the capital gains are taxed at the lower rates of 0% or 15%, depending on the marginal income tax rate of the taxpayer(s) and the ordinary income realised from depreciation recapture is taxed at a maximum rate of 25%.

⁶⁴ These steps are reflected in the workings within the tax calculation for US-H5 in Appendix VIII, page 736.

⁶⁵ These results are reflected within the tax calculation for US-H5 in Appendix VIII, page 736.

⁶⁶ This ignores the nil-rate band with respect to the standard deductions and personal exemptions, applicable to the very low-income earners.

Alternative minimum tax (AMT)

Individuals with an adjusted taxable income in excess of a set threshold or exemption (\$70,950 MFJ for 2009) will trigger an *alternative minimum tax (AMT)* under IRC § 55. The tax applied is a nearly flat rate (26% on alternative minimum taxable income up to \$175,000 and 28% thereafter). The taxable income is adjusted for certain preferentially taxed income elements and certain deductible expenses in accordance with IRC § 56. The intention of AMT is to impose a higher effective rate of tax and to limit the benefit of the aforementioned preference items and deductions.

Preference items include personal exemptions and standard deductions (if claimed). If itemized deductions are claimed, all taxes itemized on Schedule A (i.e. state and local taxes, property taxes, etc.) are considered preferences. Also included is an adjustment for the depreciation allowance claimed on rental real estate. The MACRS allowance is refigured using an Alternative Depreciation System (ADS), which is a straight-line method of depreciation over 40 years.

The calculation of AMT starts with regular taxable income to which adjustments for relevant preferences are made (usually additions to the taxable income) to derive an alternative minimum taxable income. The surplus adjusted ordinary income in excess of the allowable exemption is then subject to the minimum applicable tax rate. Capital gains and depreciation recapture are still taxed at the applicable reduced rates.

The exemption and tax bands are determined by filing status. The exemption is phased out between set thresholds (\$150,000 and \$433,800 MFJ in 2009) at 25% of the surplus taxable income (as adjusted) in excess of the lower threshold.

With continued reference to 2009 US micro-simulation for the highest tiered homeowner (US-H5), AMT is calculated is as follows:

Step 1 – add back the personal exemption deduction to regular taxable income:

$$\$220,591 + \$14,016 = \$234,607$$

Step 2 – add back the real estate tax deduction (\$8,530) and subtract the disallowed portion of itemized deductions (\$962)

$$\$234,607 + \$8,530 - \$962 = \$242,175$$

Step 3 – given the fact that adjusted income determined in Step 2 exceeds the lower threshold of \$150,000 and does not exceed the upper threshold of \$433,800, the exemption must be phased out. Therefore, the next step is to subtract the lower threshold from the adjusted income and multiple the result by 25%:

$$(\$242,175 - \$150,000) \times 25\% = \$23,044$$

Step 4 – subtract the set exemption from the AMT income and add back the phased out portion determined in Step 3 to determine the AMT income:

$$\$242,175 - \$70,950 + \$23,044 = \$194,269$$

Step 5 – as the amount determined in Step 4 exceeds \$175,000, multiply the AMT income as determined in Step 4 by 28% and subtract \$3,500 (2% of \$175,000) from the result:

$$\$194,269 \times 28\% - \$3,500 = \$50,895$$

Step 6 – the AMT as determined in Step 5 is compared with the regular tax and the higher amount is payable:

Alternative Minimum Tax ⁶⁷	\$50,895
Regular Tax	50,616
Tax Payable (the greater of the two)	50,895

With regard to the illustration offered in a preceding section to this chapter on capital gains for the highest-tiered alternative investor (US-A5), reference to AMT was included in the footnote. The following steps are relevant in determining the \$86,911 AMT:

⁶⁷ These steps are reflected in W14 of Appendix VIII, page 742.

Step 1 – add back the personal exemption and standard deduction to regular taxable income:

$$\$372,430 + \$11,400 + \$9,732^{68} = \$393,562$$

Step 2 – given the fact that adjusted income determined in Step 1 exceeds the lower threshold of \$150,000 and does not exceed the upper threshold of \$433,800, the exemption must be phased out. Therefore, the next step is to subtract the lower threshold from the adjusted income and multiply the result by 25%:

$$(\$393,562 - \$150,000) \times 25\% = \$60,890$$

Step 3 – subtract the set exemption from the AMT income and add back the phased out portion determined in Step 2 to determine the AMT income:

$$\$393,562 - \$70,950 + \$60,890 = \$383,502$$

Step 4 – subtract the capital gain from the amount determined in Step 3 to derive the AMT income to which the AMT rate will apply:

$$\$383,502 - 130,536 = 252,966$$

Step 4 – as the amount determined in Step 4 exceeds \$175,000, multiply the AMT income as determined in Step 4 by 28% and subtract \$3,500 (2% of \$175,000) from the result:

$$\$252,966 \times 28\% - \$3,500 = \$67,331$$

Step 5 – multiply the capital gain by the applicable rate (15% as the marginal tax rate is in excess of 25%):

$$\$130,536 \times 15\% = 19,580$$

Step 6 – add the capital gains tax to the AMT to determine the total tax liability under the alternative minimum tax regime:

$$\$19,580 + \$67,331 = \$86,911^{69}$$

⁶⁸ The personal exemption has been limited given the high level of income. The reader is referred to the earlier section in this chapter on Personal Exemption Allowance for information on this mechanism.

Tax credits

Certain tax credits may offset the total tax liability including the child care credit, credit for the elderly or disabled, child tax credit, education credits, earned income credit among others.

⁶⁹ These steps are reflected in W14 of Appendix VIII, page 742.

Chapter 4: Methodology

4.1. Introduction

This chapter sets out the research methodology, including epistemological and ontological considerations (section 4.2), the research design (section 4.3), the micro-simulation method (section 4.4), and the various techniques employed (section 4.5).

4.2. Philosophical paradigm

A logical beginning to the chapter on methodology is a discussion on the researcher's paradigm or worldview and the interpretive framework in which the research is set. A *paradigm or worldview* is "a basic set of beliefs that guide action" (Guba 1990, p17). Several possible perspectives have been established in the literature including positivism, post-positivism or neo-positivism, realism, interpretivism, an advocacy/participatory perspective and pragmatism.

Assuming a scientific approach to the research, the author's perspective is one firmly grounded in post-positivism. The author believes that the equity of a tax system can and should be evaluated *objectively*, in a logical, methodical manner with an emphasis on the empirical data collection and generation, and should be cause-effect oriented. The research will be underpinned by simulation work through the use of computer software to ensure accuracy and reliability. The theories underpinning the research will be mapped to the hypotheses and resulting research questions, then to the methods employed, and finally to the results and conclusions. The rigor, reliability, and validity will be ensured by the methods employed, specifically with regard to the multiple levels of data collection and generation. Ultimately, the results and conclusions will use scientific reporting techniques including graphs and charts. The research strategies, methodologies, and conclusions bear the hallmarks of a scientific, post-positivist perspective to research.

The research approach is essentially deductive in that a relevant theory has been established, a significant literature has evolved criticizing specific tax policies based on this theory, and specific questions herein have then been deduced. The literature has led to the research questions, which is indicative of deduction.

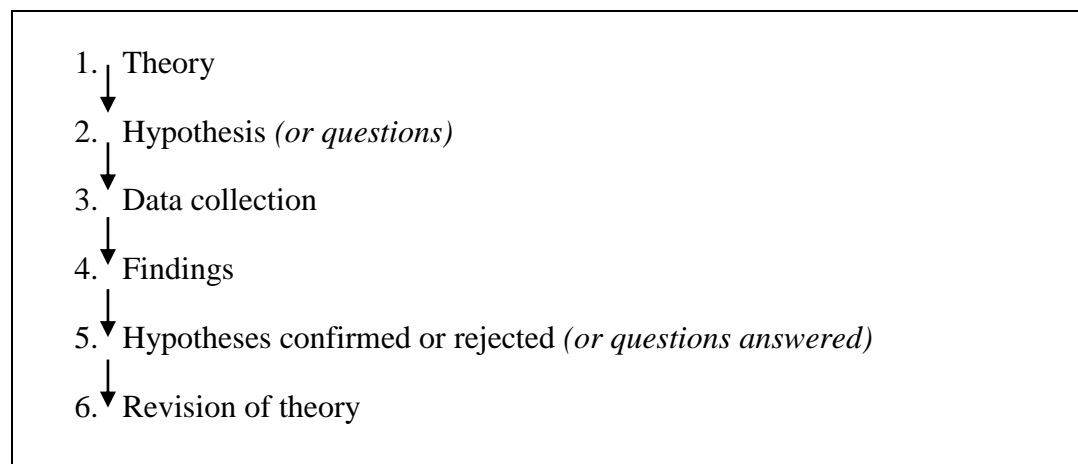
The tax theory underpinning this research as established in the literature is the *optimal tax theory* stating that taxation should ideally be neutral and equitable (Smith, 1999/1776, and others). Owner-occupied housing tax policies have been identified as inefficient and/or inequitable in most OECD countries and for these reasons policy makers and academics have long argued for their elimination and/or reform.

The specific research questions stemming from this theory and corresponding literature on which the research is based are:

- How inequitable are the owner-occupied housing policies in the two countries studied?
- What would the equity effects be in a more neutral tax system?
- How has the equity changed over the period of time studied?

By challenging the existing literature on inequities in tax policies, this research clearly assumes a deductive approach. The sequence of steps for deductive research is depicted in Figure 4.1.

Figure 4.1 The process for deduction



Source: Bryman and Bell (2003) p11; modification to Step 2 deduced from Maylor and Blackmon (2005).

The last step in the process identified by Bryman and Bell (2003, p10) signifies a movement from a deductive to an inductive approach in that it requires the researcher to infer the implications of the findings for the theory(ies) that prompted

the research in the first place. That said, the deductive approach is clearly linear in that one step follows the other, which may be contrasted to an inductive approach where the steps are circular as theory is developed through research.

The analyses will be based on micro-simulations and quantifiable measures of deviation and progression. The numerous products of the various simulations and measures represent the *collected research data* (i.e. step 3 in the aforementioned deductive process). The data and the simulation processes are thoroughly discussed in Section 4.4.2.

With respect to the ontological aspect of research, the author is firmly within the camp of objectivism. The equity aspects of a country's tax structure are external facts beyond the influence of the researcher, the taxpayer and the reader. The alternative ontological position of constructionism asserts that social phenomena and their meanings are the product of social actors and constantly changing (Bryman and Bell 2003, p20).

Interpretivism is recognised as a contrasting epistemology to positivism and its advocates hold the view that social sciences should not be analysed with the same approaches as natural sciences. Arguably, if this research regarded the *perceived fairness* of a tax system, rather than tax equity, one may approach it from such a perspective. In so doing, the researcher may consider a *subjective* evaluation of participants' views as the research may be influenced by the perceptions of the researcher.

An advocacy or participatory approach may establish an action agenda for reform that would improve the equity of the tax policies. The researcher's aim would be to provide a voice for the participants of the research. The aim of this research is to determine the degrees of inequities at various levels of income and investment in each of the two countries and then in comparison to each other. It is anticipated that the tax subsidies may be decomposed, thus identifying the more inequitable policies from an objective perspective. While the author and readers of this research may develop opinions on the equity of the two countries' tax policies as a result of the findings, the research will be conducted from an objective standpoint.

A pragmatist approach would focus on the outcomes of the research rather than the antecedent conditions (as in post-positivism). The emphasis of this research will be on the methods, measurement techniques and final analysis of the data. There is no targeted audience or ultimate “agenda” stemming from this research. The study’s results are anticipated to be conclusive answers to the set research questions which may be of interest for policy development or purely academic.

4.3. Research design

The research approach is best described as a multi-layered comparative micro-simulation, in which the tax liabilities and obligations of hypothetical ‘case’ families with different income levels and investments in two countries (the UK and the US) are analysed and compared over a period of twenty years. The analysis of ‘case’ families in two countries over time suggests that the approach is similar to ‘case study’ research, as it meets the definition of a case study offered by Ragin and Becker (1992, p5) as “the study or analysis of a social phenomenon specific to place and time”. However, given the relatively narrow focus of the analysis in this research and the fact that the method employed involves simulations of the tax liabilities of *hypothetical* families (rather than actual families) with *assumed* income levels and investments, the term ‘comparative micro-simulation’ is felt to be more appropriate than ‘case study research’.

In order to generalise the findings of the research, validity, and reliability of the methodology are required. The integrity of the methodology is enhanced by a systematic approach in the design and data collection, eliminating researcher bias and establishing a basis for analytic generalisation. Yin (2003) identified five essential components of research design with respect to case studies, which are also applicable here:

1. Research questions;
2. Research propositions;
3. Unit of analysis;
4. The logic linking data to propositions; and

5. The criteria for interpreting the findings.

Each of these components is considered as part of the research design.

4.3.1. The research questions

The specific research questions derived from the literature review are as follows:

- Firstly, how horizontally inequitable are the owner-occupied housing tax policies (i.e. acquisition taxes, property taxes, elements affecting income taxes and capital gains taxes) in each country studied?
 - How horizontally inequitable are the specific tax policies?
 - How horizontally inequitable is the combined overall effect of the respective owner-occupier housing tax policies in each country on an annual and longitudinal basis?
 - How does the horizontal equity of one country's specific tax policies and the overall tax impact compare with the other country studied?
- Secondly, how vertically inequitable are the owner-occupied housing tax policies in each country studied?
 - How vertically inequitable are the specific tax policies?
 - How vertically inequitable is the combined overall effect of the respective owner-occupier housing tax policies in each country on an annual and longitudinal basis?
 - How does the vertical equity of one country's specific tax policies and the overall tax impact compare with the other country studied?
- Thirdly, what would the effect on equity be under more neutral tax regimes in both countries?

- How much of the inequities are attributed to the mortgage interest reliefs?
 - How much of the inequities are attributed to the absence of imputed rental income?
 - How much of the inequities are attributed to the absence of imputed rental income and capital gains taxation?
- Finally, how have the countries' recent respective tax reforms regarding owner-occupied housing (all implemented within the time frame studied) affected tax equity?
 - Have the specific policy changes improved or hindered horizontal equity?
 - Have the specific policy changes improved or hindered vertical equity?
 - Have the recent reforms been more or less successful, on a comparative basis, in improving tax equity in the countries studied?

4.3.2. The research propositions

Whilst the research questions point toward a comparative methodology, it is the research propositions that will determine the specific methods and tools necessary to answer the questions. The author has the following propositions in this study:

- Tax equity should be determined on a horizontal basis.
 - Horizontal equity should be evaluated with reference to specific taxation, overall taxation, on an annual basis and a cumulative basis.
- Tax equity should be determined on a vertical basis.

- Vertical equity should be evaluated with reference to specific taxation, overall taxation, on an annual basis and a cumulative basis.
- The equity of specific tax policies and their overall effect may be decomposed in terms of relative degrees of distortion.
 - The existing tax system should be measured against a generally accepted system.
 - The existing tax system should be measured against a tenure neutral tax system.
 - The existing tax system should be measured against a tax neutral tax system.
- The equity effect of legislative changes in each country's tax system during the study period should be clearly identified.
 - The effect of policy changes on horizontal equity should be identified.
 - The effect of policy changes on vertical equity should be identified.
 - The overall effect should be compared with the other country of study in terms of improvements or hindrances to horizontal and vertical equity.

4.3.3. Units of analysis

This research focuses on two countries' tax regimes, which are comprised of selected specific tax systems (i.e. acquisition taxes, property taxes, income taxes, and capital gains taxes). Conclusions are drawn from the specific tax liabilities and overall tax obligations of the chosen case families within each country's tax regime. Therefore the main unit of analysis is represented by a chosen country's tax regime, which comprises multiple embedded sub-units (i.e. the specific tax systems) and represented by multiple holistic sub-units (i.e. the individual case families). The case families are considered holistic rather than embedded sub-units based on their relationship with their country's tax system (i.e. they exist within the tax regime;

they do not comprise the tax regime). Conversely, the specific tax systems do comprise the tax regime and therefore are considered as embedded sub-units.

A multi-layered micro-simulation approach focuses on more than one unit of analysis and may therefore be referred to as a *comparative* study. The main advantage of a comparative study is that it should produce more compelling evidence from the multiple units of analysis and thus generate more robust overall results (Herriot & Firestone, 1983). The downside would be significant increases in resources and time, depending on the nature of the study. Also, one may be sacrificing the depth of a single case analysis for the breadth of a multiple case analysis. In this study, it is important to establish the criteria that affect the overall equity of a tax system, identifying patterns and trends, and this is best done on a comparative basis.

In deciding how many countries to include in this study, the author is guided by “replication” logic rather than “sampling” logic. *Literal replication* would be established by choosing two countries with similar tax policies with an expectation of yielding predicted similar results. *Theoretical replication* would be established with two or more different tax policies yielding contrasting results for predictable reasons (Yin, 2003). The author believes a more comprehensive analysis will be achieved by satisfying theoretical replication and has therefore decided to analyse two countries of varying degrees of favouritism in their specific tax policies towards owner-occupied housing.

Equity measures are dependent on how the tax liabilities have been determined. One method is to establish the tax liabilities at “fixed multiples of a single reference income level” (Norregaard 1990, p85). In so doing, one defines a ‘typical case,’ a common example is the average (one income) wage earner, married with two children.⁷⁰ With basic assumptions on allowances and credits, this individual’s tax liabilities may be calculated at various levels of income as stipulated by tax legislation (i.e. half, twice, three-times, four-times, *etcetera*, the average wages). This method is particularly useful for structural progression analysis but not as useful for distributional progression analysis as the former measures progression at specific points of income and the latter measures progression pertaining to the whole

⁷⁰ This method was used in studies conducted by the OECD (1980) and Haffner (2000).

economy. Distribution progression analysis calls for survey data (household income distribution statistics) but caution need be exercised with regard to its comparability if international comparisons are the objective (Norregaard 1990).

This research is intended to clearly and accurately identify and quantify horizontal and vertical inequities resulting from owner-occupied housing tax policies in two countries. While this may be done in a number of ways as indicated in the literature review, the author believes a micro-simulation possesses two clear advantages. First, in order to evaluate horizontal equity one needs to establish equals for comparison. This is rarely recognised in the real world and ideally established through simulation. Second, clarity and therefore simplicity are desirable traits in research aimed at a wider audience and this may be best achieved through a micro-simulation construct with the analysis focused on the structural impact of tax systems. Readers may or may not find the statistical analyses and mathematical modelling techniques in literature comprehensible and/or persuasive, whereas straightforward number crunching identifying clear winners and losers in absolute money terms may be better understood and appreciated.

The author will construct micro-simulations of tax liabilities yielding the effective (average) and marginal tax rates and tax burdens for each year per case family as well as the overall effective tax rates and tax burdens for the entire period of study per case family. This data will then be utilised to establish and quantify horizontal and vertical inequities in the respective tax systems.

The construction will comprise two countries (UK and US), three forms of investment (owner-occupied housing, rental property investment and alternative investment) and five levels of income (multiples of the median wage earners (*MWE*): $\frac{1}{2}$, 1, 2, 4, and 5 times). The case families will be designated by country (UK and US), investment (H, T/L or A) and multiple ($\frac{1}{2}$, 1, 2, 4, and 5). For example, the US case family invested in housing with income and a corresponding investment four times the median wage would have the designation US-H4. There will be fifteen case families per country, five invested in housing at five differing levels of income, five families invested alternatively and five families invested in a rental property, each at equal levels of income while renting their accommodations.

The twenty-year period of time the study will cover is from 1990 to 2009 (1990/91 to 2009/10 with respect to the UK's fiscal tax years). The time frame is realistic in length in that it is long enough to incorporate significant changes in the respective countries' tax policies with regard to owner-occupied housing and it is short enough to be manageable in its construction.

4.3.4. The logic linking data to propositions

The concept of *pattern matching* has been recognised as one acceptable approach to link data with propositions (Yin 2003, Trochim 1989, Campbell 1975). Yin (2003) considered *rival explanations as patterns* and *simpler patterns*.

The initial computations per case family will yield tax burdens, average tax rates, and progression indices. These results are deemed to be *points* that then may be compared with the corresponding points of the same case family at another point in time (i.e. *point analysis*). Additionally, the results may be compared with those derived from case families with the same investment at different levels of income or the same level of income with an alternative investment. This approach is referred to as *paired analysis*. The objective is to identify patterns and trends, verify predictions, and ultimately address the research questions. This is a brief summary addressing the fourth research design element⁷¹. The actual methodology and techniques will be detailed in Section 4.6 (Measuring the inequities).

4.3.5. The criteria for interpreting the findings

The methodology will be to first analyse the simulated data for each country separately constituting a *within-country analysis* approach. The horizontal and vertical equities are expected to differ at the beginning and ending of the study as a result of policy reform specific to owner-occupied housing. This will be evident from the various measures utilized in the analysis and conclusions on whether the reforms have improved or hindered equity will be thus established.

Once conclusions have been reached on all country specific research questions, a *cross-country* comparison and analysis of the two countries will be made. The aim

⁷¹ Yin's five essential components of research design were listed earlier in this chapter and summarised with regard to this study on the following page.

is to answer the questions on how they compare on a tax specific level, an overall cumulative level and with regard to the respective policy changes. Again, details of this methodology will be discussed at length in the following section. Table 4.3 sets out the five components to research design with a brief summary of the criteria relevant to this study.

Table 4.1 Research design: steps and criteria

<u>Five Components of Research Design</u>	<u>Specific Research Criteria</u>
<ul style="list-style-type: none"> The research questions 	<ul style="list-style-type: none"> How horizontally inequitable are the tax policies and how do they compare? How vertically inequitable are the tax policies and how do they compare? What would the effect on equity be under more neutral tax regimes? How have the recent respective tax reforms affected tax equity?
<ul style="list-style-type: none"> The research propositions 	<ul style="list-style-type: none"> The equity of specific tax policies and their overall effect should be considered on a <i>horizontal</i> basis. The equity of specific tax policies and their overall effect should be considered on a <i>vertical</i> basis. The equity of specific tax policies and their overall effect may be decomposed in terms of relative degrees of distortion (i.e. GAP, tenure and tax). The equity effects of legislative changes should be clearly identified on both horizontal and vertical bases.
<ul style="list-style-type: none"> Units of Analysis 	<ul style="list-style-type: none"> Two countries Five levels of income Three alternative investments Four specific tax regimes Three levels of neutrality
<ul style="list-style-type: none"> The logic linking data to propositions 	<ul style="list-style-type: none"> Pattern Matching – linking several pieces of information from same countries related to some theoretical proposition. Point Analysis – consider horizontal equity, vertical equity and the degree of fiscal privilege (varying levels) among all countries. Paired Analysis – similarities and differences between countries
<ul style="list-style-type: none"> The criteria for interpreting the findings 	<ul style="list-style-type: none"> Within country analysis Cross-country analysis (compare and contrasting)

4.4. Tax models and simulations

4.4.1. Methodological development – in general

In general terms tax models are supply-side partial equilibrium models. They range from simple desktop calculations to complex computer facilitated computations. Most OECD Member countries use personal income tax models for analysis and budgetary purposes (OECD, 1988).

Simulations are useful tools to analyse the *impact* of certain tax policies. The impact may be considered from the perspectives of the distribution of the tax burden and/or the corresponding revenue gains and losses. Commonly, a base-line scenario is identified. In taxation, this may be the *status quo* (i.e. tax liabilities simulated with no policy change). Then an alternative scenario is forecasted and compared with the base line. The variation between the two scenarios clearly identifies the impact of the policy change (Merz, 1991).

Brenner and Werker (2007) provided a taxonomy of the existing simulation approaches. They attribute the increasing popularity of simulations in economic research to its inherent flexibility over other methods.

To give some examples, mathematical analysis is constrained to models that are treatable; econometrics is commonly used and restricted by the data that can be obtained for one kind of research unit; and experimental economics is limited by the types of situations that can be adequately reproduced in the lab. The simulation approach does not face such restrictions (Brenner and Werker, 2007).

There are several distinct types of simulation to consider. These include the conventional simulation approach, the history-friendly model, micro-simulations, and the Bayesian simulation approach. The authors proposed an additional approach in their paper: the *abductive simulation model* (Brenner and Werker, 2007).

All simulations have in common only two components: implications and assumptions. Quite simply, a simulation is a tool used to draw out the implications from the assumptions made.

A micro-simulation is a modelling technique operating at the individual level (i.e. person, household, etc.). It may be used for problem solving, reflective investigations, and forecasting. The technique originated with Orcutt (1957) but has only recently become popular in econometrics with the significant increases in data sets and decline in computing costs (Bourguignon and Spadaro, 2006). Micro-simulation models (MSM) are now widely used in both the public and private sectors.

A micro-simulation approach in economics imitates the experimental approach in biology or psychology – with one major difference. Experimentation in biology or psychology compares the observed state and behaviour of agents before and after a change to their environment. In economics, the simulation bears only on the change in the environment and on the ‘imputed’ changes in behaviour or welfare. The comparison is thus made ex ante rather than ex post (Bourguignon and Spadaro, 2006).

Micro-simulation is considered a forecasting tool because of its ability to forecast policy effects (Mertz, 1991). Social equity may be evaluated with respect to fiscal and demographic changes considered in a simulation. *Ex ante* forecasting is a conditional look into future developments whereas *ex post* forecasting considers a given (historical) real world scenario under an alternative light (Mertz, 1991).

Simulations have varying construct characteristics, four of which are now considered.

Firstly, simulations vary in size and complexity; from the small, simple and self-contained to the complex, interfacing models that are used in national government departments. When the effects of certain tax policies are considered on an international level, there are three possible approaches. Firstly, comparisons of the published results of national micro-simulations may be made. It is unlikely however, that independent exercises are comparable given the variations in simulation options (Callan and Sutherland, 1997). The second possible approach is to utilise existing national models, reconciling differences in definitions and assumptions. The third approach is to construct a purpose-built integrated model underpinned by common definitions and assumptions (Callan and Sutherland, 1997).

EUROMOD is a recent European Union model developed at Cambridge University specifically for trans-national comparisons (Sutherland, 2001).

Secondly, simulations may or may not consider behavioural changes. Where behaviour is assumed exogenous to the tax system, the simulation is an *accounting* or *arithmetic* model. When behaviour is considered and therefore second and/or third round effects recognised, the simulation is a *behavioural model*. The type of behaviour calibrated varies among simulations but labour supply and consumption are common considerations (Bourguignon and Sparado, 2006).

Thirdly, simulations may be either static or dynamic with respect to the time frame considered. For construction simplicity, the majority of simulations provide a static overview of one point in time. The static micro-simulation based on cross-section data is used for short and medium range forecasts where fiscal policy is systematically varied and the corresponding effects on the income distribution are analysed. The static micro-simulation is first set in the time period of the cross-section data. The sample may be ‘aged’ and temporal extrapolation for further forecasting is possible (Mertz, 1991).

The aging procedure is the main difference between static and dynamic micro-simulation models. A life-cycle (dynamic) model is far more complex than the static model and may be sub classed as dynamic cross-sectional or dynamic longitudinal micro-simulations. “In a dynamic cross-section micro-simulation model each micro-unit of a sample is aged individually by an empirically based survivor probability.” In a dynamic longitudinal micro-simulation, micro-units are synthetically created and forecasted (Merz, 1991).

Fourthly, simulations may be considered deterministic or stochastic with respect to their data parameters. That is to say, all structural and procedural data are either fully determined or, in a stochastic simulation, some or all of the deterministic relationships are disturbed by random influences (Merz, 1991).

Literature on tax issues investigated through micro-simulations include Aaron et al. (1972), Orcutt (1986), Michael and Lewis (1989), Gruber (2000), Creedy and Duncan (2002), Labandeira *et al* (2004), Creedy and Kalb (2005), and Spadaro (2005). Literature specific to owner-occupied housing tax issues investigated

through micro-simulation include Berkovec and Fullerton (1992), Follain and Ling (1991), Nakagami and Pereira (1996), Haffner (2000), Sheffrin and Turner (2001), Wood *et al* (2006) and Onrubia *et al* (2009).

Wood *et al* (2006) used a micro-simulation model of the Australian housing market to predict the housing tenure consequences of certain housing policies (i.e. the First Home Owner Grant, FHOG) and housing market shocks. Onrubia *et al* (2009) considered three different measures of imputed rental income in their micro-simulation, and the respective redistributive impact on the Spanish personal income tax system. In each of these micro-simulations, the data-sets were samples provided from national agencies. Wood *et al* (2006) used two Australian Bureau of Statistics (ABS) surveys and a Survey of Income and Housing Costs (1997 SIHC). Onrubia *et al* (2009) used actual tax returns provided by the Spanish Institute of Fiscal Studies panel of PIT tax filers.

Simulations may use actual micro-data sets or a “representative agent”. The advantage of using actual data is twofold: it is reflective of the heterogeneous nature of the micro-units and it may be statistically generalised for a given population. The alternative is to identify (or construct) a representative agent for analysis. This may be the basis for determining other micro-units that may simply be a multiple of the first construct. This approach is necessary where available data sets do not provide the required variables for the desired model. Haffner (2000) used the representative agent micro-simulation model technique in establishing the tax subsidy in owner-occupied housing in the user cost framework given data limitations.

Figures on user costs and subsidies based on the user cost framework are not available in present-day statistics. Therefore, own calculations are necessary (Haffner 2000, p60).

This research is also considering the user costs and subsidies based on the user cost framework as will be established in the following section. For this reason, and in the interest of clearly and accurately measuring the horizontal equity or inequities, the representative agent micro-simulation technique is employed.

4.4.2. Calibration of the micro-simulations – research specific

The micro-simulations used in this research are spread sheet constructions underpinned by the respective tax systems of the two countries studied, the UK and the US. Within each country-specific simulation fifteen case families are established. The families vary in two respects. First, the families reflect different levels of income earnings in that there are five multiples of the median wages relative to the two countries in 1990. Second, the families vary in terms of their investment choice in that five families of differing levels of income are invested in owner-occupied housing, five in rental real estate and five in alternative (financial) investments.

This section provides a detailed account of the constant and variable data used in the simulations as well as the assumptions made and their justifications.

Income

The 1990 median wage income in each country is used to calibrate the simulations. For consistency among the studies, the multiples of this amount are ½, 1, 2, 4 and 5. By including case families one half of the median wage, the scope is wide enough to include:

- UK case families invested in real estate below the stamp duty threshold;
- UK case families falling within Band A for council tax purposes;
- UK case families selling rental real estate below the capital gains annual exemptions;
- US case families in the lowest income tax bracket; and
- US case families in the lowest capital gains tax bracket.

Arguably, the multiple of three- and four-times the median wage is not as informative as four- and five-times the median wage. With the highest tier set at five-times the median wage the scope is widened enough to include:

- Higher rates of stamp duty land tax in 5-year rolling UK simulations;
- Higher rates of US income and alternative minimum taxation;

- US case families invested in rental real estate exceeding the income level in which passive activity losses are allowed.

These multiples ensure a fair and reasonable representation of income distribution and an adequate reflection of the respective tax brackets in both countries.

United Kingdom: The median household income in 1990 in the UK is estimated to be £13,600 (constant pounds) based on an average annual inflation rate of 3.5% and a recorded median income of £15,132 in the spring of 1993.⁷² This is deemed reasonable in comparison with the US median wage.

United States: The median household income in 1990 in the US was \$29,943 (constant dollars) with a standard error of \$153.⁷³ This is rounded up to \$30,000.

Mortgage terms

The mortgage financing (M) for the homeowners and those invested in rental properties are functions of income (Y). At all levels of investment the amount is equal to two and a half times income ($2.5Y$). The mortgage term is assumed to be the thirty-year standard in both countries.

United Kingdom: The interest is assumed to be variable for the life of the mortgage, tracking the UK base rate plus 1 per cent. While in 1990 endowment mortgages were more popular, such mortgages were not available in the US. The author assumes a repayment mortgage for the comparative purposes of the study with the aim of isolating the impact of owner-occupied housing taxation.

United States: The interest is assumed to be a fixed rate of seven per cent (7%) for the life of the mortgage. This is an average of the mortgage interest rates⁷⁴ offered during the period of the study. Realistically though, this rate would not have been offered until, at the earliest, 1994. For the purposes of the study, the author does not

⁷² As per the Office of National Statistics at http://www.statistics.gov.uk/downloads/theme_labour/LFSHQ/Table34.xls.

⁷³ As per the U.S. Census Bureau at: <http://www.census.gov/hhes/www/income/histinc/h08.html>

⁷⁴ As per the Mortgage-X Information Service website at: <http://mortgage-x.com/x/indexes.asp>

believe it necessary to assume one rate for the first four years and then assume a refinancing for the lower rate: seven per cent (7%) is assumed for the entire study.

Levels of investment

With regard to the homeowner occupiers and the rental property investors the levels of investment in housing are functions of income. The mortgage finances are assumed to be 80 per cent of the value of the properties. Therefore the property values (P) equal two and a half times income, grossed up at 80 per cent. ($P = 2.5Y/80 \times 100$). Equity finances (E) are therefore equal to the difference between the house values and the mortgage financing ($P-M$), or 20 per cent of the house value ($0.20P$) at the beginning of the study period. This amount is equal to one half of a year's wages for the respective investors. The homeowner occupiers and tenant / landlord families (H and TL) make further contributions of equity throughout the period studied given the assumption of repayment loans.

At the beginning of the study, the alternative investors (A) are assumed to have equal amounts in savings as their homeowner equivalents (i.e. 50% annual wage income in 1990). This is invested in diversified funds that are capital appreciating only (i.e. no dividend or interest income). The reason for assuming pure capital appreciating funds is for comparability of investments (i.e. the home is a pure capital appreciating investment). In addition to the original investment, the alternatively invested families make further contributions annually to their investments in order to match the equity invested by the homeowner occupiers and tenant / landlords. These additional contributions are equal annual amounts invested at the end of each tax year, the sum of which matches the total principal contributions of the equivalent homeowner occupiers and the tenant / landlords. This ensures comparable levels of investments for all three types of investor.

Inflation and growth

United Kingdom: The annualised rate of inflation in the UK during the period of the study was 2.6 per cent.⁷⁵ This was close to the inflation on median income reported

⁷⁵ As per RateInflation website at:

<http://www.rateinflation.com/inflation-rate/uk-historical-inflation-rate.php?form=ukir>

by HMRC at 3.2 per cent. Housing inflation experienced in the UK during the period studied was 5.3 per cent, according to the Nationwide historical database.⁷⁶

United States: The annualised rate of inflation in the US during the period of the study was 2.8%.⁷⁷ This was close to the inflation on median income reported by the US census at 3.1%. Housing inflation and the average rental appreciation experienced in the US during the period studied was 4.98% and 2.88%, respectively, according to 2005 Census data.⁷⁸

For consistency among each country analysed, a constant rate of inflation and growth at 3 per cent is assumed for the entire study. This is consistently applied to income, housing and alternative investment growth, and rental income and expenses (user costs) on an annual basis. The primary objective of the micro-simulations is to establish the impact of taxation and measure equity. In so doing, extraneous factors must be held constant. While the author acknowledges inherent differences in growth rates between housing, alternative investments, and income the growth rate assumed in this study must nevertheless be held constant.

Imputed rental income (user costs)

The impact of taxation on homeownership has been established in the literature through an analysis of associated user costs in comparison with those of alternative tenures, chiefly private rental scenarios. In establishing an imputed rental income (*IR*) for the homeowner, one may consider a fair market rent (*GR*) net of the associated operational (user) costs (*UC*) of the property.

$$IR = GR - UC \quad (1)$$

The user costs include property taxes (*t*), maintenance (*m*), depreciation (*d*), and utilities (*u*) as a percentage of the property's value (*P*). Also included is the mortgage interest (*i*), which is a percentage of the outstanding mortgage debt (*M*). Equation (1) may then be expanded to reflect the user costs as:

⁷⁶ As per Nationwide at : http://www.nationwide.co.uk/hpi/downloads/UK_house_price_since_1952.xls

⁷⁷ As per the Measuring Worth website at : <http://www.measuringworth.com/calculators/inflation/result.php>

⁷⁸ As per the US census at <http://www.census.gov/hhes/www/income/histinc/h08.html>

$$IR = GR - [P(t + m + d + u) + iM] \quad (2)$$

To illustrate the impact taxation has on an owner-occupier, the above equation should be restated to reflect the costs allowed as deductions from income tax ($1-r$), where (r) equals the marginal rate of taxation. With respect to the US tax legislation, mortgage interest and real estate taxes are allowed as deductions if the taxpayer opts to itemize their deductions in lieu of claiming the standard deduction. If this is the case, equation (2) would then be restated as:

$$IR = GR - [P(t(1-r) + m + d + u) + (1-r)iM] \quad (3)$$

The alternative tax treatment of a private landlord in the US would alter equation (3) by recognising that the imputed rents of the owner-occupier is reflective of net rental income (NR) of the landlord, which is taxable income. Therefore, the landlord's equation would be stated as:

$$NR = (1-r)[GR - (P(t + m + d + u)) + iM] \quad (4)$$

The differences between the two expressions are the taxation of gross rents, net of maintenance, depreciation and utilities on the side of the landlord.

$$IR \rangle NR \Rightarrow r[GR - (P(m + d + u))] \quad (5)$$

Equation (5) is reflective of the literature produced by Aaron (1970), Hellmuth (1977), and Giertz and Sullivan (1978).

From the perspective of the tenant, he/she would incur the gross rent expense without any tax relief for operational expenses capitalised in the rent (i.e. mortgage interest and real estate taxes).

Included in the rental price will be a real rate of return as a percentage of the house value (αP). This is equivalent to the opportunity cost of the homeowner's equity (i.e. the return the homeowner would have expected with an alternative investment). There are two aspects to the opportunity cost of the homeowner or the required rate of return on investment for the landlord. First, there is the required rate of return on the investment on an annual basis of what the equity would yield in interest or dividends in an alternative investment. Second, there is the ultimate return on

investment from disposition. In order to account for the first element, the interest (i) reflected as an element of the user costs should be based on full value of the asset (P) rather than just the mortgage financing (iM reflecting the user cost and iE reflecting the opportunity cost, whereas $M+E=P$). The second element (α) is a percentage of the asset's value (P), as a deduction from gross rents. This is reflective of the fact that the gain realised on disposal from asset inflation works inversely to annual required return from rents (i.e. the greater the anticipated capital gain, the less rental income required).⁷⁹ In equilibrium, gross rents would therefore be stated as:

$$\begin{aligned}
 GR &= UC + iM + RR \\
 GR &= [P(t + m + d + u) + iM + i(P - M) - \alpha(P)] \\
 GR &= P(i + t + m + d + u - \alpha)
 \end{aligned}
 \tag{6}$$

Equation (6) is reflective of the literature produced by Woodward and Weicher (1989), Poterba (1992), and Haffner (2000), among others.

To illustrate the above models assume the following:

<i>Property value (P) = \$200,000</i>	<i>Mortgage debt (M) = \$160,000 (80% of P)</i>
<i>Property taxes (t) = 2 per cent</i>	<i>Mortgage interest (i) = 7 per cent</i>
<i>Maintenance (m) = 0.5 per cent</i>	<i>Real rate of return (α) = 2 per cent</i>
<i>Depreciation (d) = 1 per cent</i>	<i>Marginal tax rate (r) = 25 per cent</i>
<i>Utilities (u) = 0.5 per cent</i>	

Gross rents may then be solved for in Equation (6) as follows:

$$\begin{aligned}
 GR &= \$200,000(7\% + 2\% + 0.5\% + 1\% + 0.5\% - 2\%) \\
 GR &= \$18,000
 \end{aligned}
 \tag{6'}$$

⁷⁹ One final point, the negative effect of inflationary growth on annual rental income will materialise in a terminal capital gain that is fully taxable to the landlord, but may be exempt from taxation in various nations for homeowners.

Equations (3) and (4) then become:

$$IR = \$18,000 - [\$200,000(2\%(1 - 25\%) + 0.5\% + 1\% + 0.5\%) + (1 - 25\%)(7\% \times \$160,000) + (7\% \times \$40,000) - (2\% \times \$200,000)]$$

$$IR = \$3,800 \quad (3')$$

$$NR = (1 - 25\%) \times [\$18,000 - (200,000(2\% + 0.5\% + 1\% + 0.5\%) + (7\% \times \$160,000) + (7\% \times \$40,000) - (2\% \times \$200,000))]$$

$$NR = nil \quad (4')$$

And therefore, equation (5) reflects the difference:

$$\$3,800 > nil \Rightarrow 25\%(\$18,000 - (\$200,000 \times (0.5\% + 1\% + 0.5\%))) \quad (5')$$

$$\$3,800 > nil \Rightarrow \$3,500 \text{ plus the } \$300 \text{ tax benefit from a } \$1,200 \text{ rental loss.}$$

Again, the difference between equations (3) and (4) is the taxation of rents net of the maintenance, depreciation and utilities assumed by the landlord. In order to illustrate the residual income and tax liabilities of the owner-occupier, renter and landlord, two assumptions are made: first, indebtedness equals two and a half times the individual's income, and second, the return on alternative investments for the renter is assumed to be 5% (a 7% interest rate with a 2% rate of inflation, matching the homeowner's information for comparability). The landlord, realising a \$1,200 net rental loss before taxation, will receive a tax benefit at 25% (marginal rate assumed) yielding a net rental loss after taxation of \$900. The owner-occupant does not realise an imputed rental income for tax purposes, but receives the same mortgage interest and real estate tax deductions as the landlord. The owner-occupant's tax benefit would then be an equivalent gross (market) rent less the expenses *not* deductible to the homeowner but deductible for the landlord at the marginal tax rate $(\$18,000 - \$4,000) \times 25\% = \$3,500$. The residual cash income and tax liabilities of the three investors with assumed earnings to be \$64,000 are reflected in Table 4.2.

Table 4.2 Residual cash income and tax liabilities

	Owner-occupier	Renter	Landlord
Earnings	\$64,000	\$64,000	\$64,000
Investment Income			
Assets \$200,000			-1,200
Assets \$40,000	<u> </u>	<u>2,000</u>	<u> </u>
Money Income	64,000	66,000	62,800
Rent Payments		(18,000)	
Mortgage interest (\$160k x 7%)	(11,200)		(11,200)
Real estate taxes (\$200k x 2%)	<u>(4,000)</u>	<u> </u>	<u>(4,000)</u>
Residual money income	48,800	48,000	47,600
Tax Liability (25%)	12,200	16,500	11,900

The tax liabilities for the owner-occupier and the landlord (who is also assumed to be a homeowner) are calculated to be 25 per cent of money income, less the mortgage interest and real estate tax deductions of \$2,800 and \$1,000, respectively.

The tax liability for the landlord is deduced to be \$300 less than the homeowner, which reflects the \$300 tax benefit from the rental loss (at 25%). The tax liability of the renter/alternative investor is deduced to be \$4,300 greater than the homeowner reflecting the loss of mortgage interest and real estate deductions of \$3,800 and the additional tax of \$500 on \$2,000 in income (at 25%).

To summarise the user cost framework, the rental income with respect to those invested in rental properties and the imputed rental income deemed applicable to the homeowners is a function of the house value and therefore, a function of income. Gross rents (*GR*) and imputed rental income (*IR*) are the sum of the user costs and the opportunity costs of the investment. The user costs include interest (*i*), property taxes (*t*), maintenance (*m*), depreciation (*d*), and utilities (*u*) as a percentage of the

property's value (P)⁸⁰. The opportunity costs are a real rate of return as a per of the house value (αP). To reiterate, the model established in the literature is as follows:

$$GR = P(i + t + m + d + u - \alpha) \quad (6)$$

However, if the annual rental compensation is determined solely from the actual user and opportunity costs, the simulation would negligently reflect a constant and significant decrease in gross rents. As this would not be indicative of the “real world” of property letting, a constant rate for user and opportunity costs based on this formula is determined and applied to the appreciating house values annually. The determined rates are consistent with the respective country's specific rental rates.

United Kingdom: The interest rate is a twenty-year average of the tracker rates used in the simulation (7%). Property taxes are not a relevant factor in the UK rents model as the Community Charge (1990-1993) and the Council Tax (1993-present) were/are costs borne by the occupants (tenants), rather than the owners of the properties. The economic depreciation rate used throughout the literature is assumed to be 1 per cent. The maintenance rate assumed is 0.5 per cent. Utilities are assumed paid entirely by the occupants (tenants) and therefore are not a factor in the user costs for the owners. The opportunity costs are equal to the growth rate assumed throughout the simulation of 3 per cent. The model used in the study is therefore:

$$GR^{UK} = P(7\% + 0\% + 0.5\% + 1\% + 0\% - 3\%) \quad (6'')$$

$$GR^{UK} = P(5.5\%)$$

This rate is deemed reasonable as the median asking rent (before housing benefits) averaged 4.7 per cent of the average house prices during a fourteen-year sample period within the study time frame (1994-2007)⁸¹. The housing costs for the homeowners (UK-H) and the alternative investors (UK-A and UK-TL) are deemed

⁸⁰ Upper case lettering represents monetary values whereas lower case lettering represents percentages.

⁸¹ As per the Department for Communities and Local Government: Table 715 Rents, lettings and tenancies: rents and rent types, by tenure and region, from 1994 available at:
<http://www.communities.gov.uk/documents/housing/xls/table-715.xls>

reasonable at an average rate of 21% and a constant rate of 17% of gross income, respectively.

A further test of reasonableness comes from the ratio of private rents to the costs commonly associated with owner-occupied housing. This is referred to as relative expenditures in the literature (Flood and Yates, 1989 and Freeman, 1997). In 1997 rents were estimated to be 110% of housing costs and in 2004 they were estimated again at 104%. The micro-simulation yielded an average of 92% over the twenty-year period, with a range from 39% in the beginning to 162% at the end.

United States: The interest and return rates are reflective of the rates assumed throughout the simulation (7% and 3%, respectively). The property tax rates are consistent with the rates assumed for the actual expenses, the US average rate applicable for the earlier years in the study (1%). The economic depreciation rate used throughout the literature is assumed (1%). The maintenance rate assumed is half a per cent (0.5%). Utilities are assumed paid entirely by the occupants (tenants) and therefore do not affect user costs for the owners.

The model used in the study is therefore:

$$GR^{US} = P(7\% + 1\% + 0.5\% + 1\% + 0\% - 3\% \quad (6'')$$

$$GR^{US} = P(6.5\%)$$

This rate is deemed reasonable as the median asking rent in 1990 in the Northeast was \$5,844 whereas the median asking price for a home in that area was \$97,700. The rate based on this information would be 6%. The house value assumed in the study for the median wage earner (US-H1) is \$93,750, which is reasonably close to the information provided by the US census on properties in the Northeast.

4.5. Measuring the inequities

The initial comparisons will be between the homeowners and the alternative investors in each respective country. This comparison provides the basis for measuring the horizontal and vertical inequities in the *existing* tax systems. The results of the two countries will then be compared and contrasted to establish the differences in equity with respect to the policy variations. Further equity analysis

will be conducted with regard for alternative, more neutral tax regimes. The final evaluation of equity will be with regard for policy reform within and across each country.

4.5.1. Horizontal equity

A brief discussion of the prior research into horizontal equity, some of which was applied specifically to owner-occupied housing taxation, is provided in the next subsection. This is followed by a description of the employed research methodology.

Earlier studies of horizontal equity

Measures of HE have been proposed by Johnson and Mayer (1962), White and White (1965), Brennan (1971), Rosen (1978), Berliant and Strauss (1983), Giertz and Sullivan (1978), Atkinson and Sandmo (1980), Plotnick (1982), among others.

Johnson and Mayer recognised the problem in the classic rule of treating equals equally in that it is a “maxim for abolishing inequity, not a rule for minimizing it in those situations where it cannot be abolished completely” (Johnson and Mayer 1962, p454). The author would disagree and offer her opinion that if HE is recognised as an ideal, then improvements to a tax system that minimise a present inequity is a logical course of action. The issue is one of defining inequity and Johnson and Mayer identified two approaches in their work (1962). First, “an inequity is an inequity, regardless of its dollar value” (Johnson and Mayer 1962, p457). It is assumed that this is the perspective that leads one to recognising the aforementioned problem. The second approach defines the magnitude of the inequity “in terms of the dollar value of the tax discrimination involved” (Johnson and Mayer 1962, p458). In their work, the authors first counted the number of inequities of same-group units, and as a second measure, they summed the money value of the inequities.

One could justify a quantitative treatment of inequity as follows: There is a wide spread intuitive feeling that inequities are not all equal, but do in some way have different magnitudes (Johnson and Mayer 1962, p458).

A horizontal inequity of \$100 between two individuals in the top tax bracket may not elicit as much distain as the same horizontal inequity between two individuals in the lowest tax bracket. The inequity, if quantified, may then be established as being proportional to the value involved, or be an increasing or decreasing function thereof (Johnson and Mayer 1962, p458).

White and White were the first to offer statistical evidence of the “homeowner understatement as a source of horizontal inequity” (1965, p225). They identified the understatement as the sum of the mortgage interest and real estate tax deductions and the imputed net rental income. An assumption was made in their study that all homeowners itemized deductions. Given the relatively low standard deduction in 1960 of \$1,000, it is understandable why such an assumption was made. As a result, little mention of the effect of equity financing and claiming the standard deduction was made. Subsequent researchers criticized this aspect of their research (Giertz and Sullivan, 1978).

The methodology used to quantify the inequities was based on the coefficient of variation with respect to after-tax income dispersions among equals. The source of data was the Residential Finance Survey of the 1960 Census for Housing. They established 13 “Comprehensive Income” levels and four family types, thus producing 52 “equal circumstance groups” (White and White 1965, p226). The results provided the average amounts of understated tax per class, which was 5-6 per cent of Comprehensive Income. They deduced that the mortgage interest deduction was less important to the higher than the lower income classes. They authors speculated on the second-round effects of legislative reform based on Goode’s 1958 research (White and White, 1965).

Brennan (1971) was critical of Johnson and Mayer’s premise of minimizing the number of inequities as this could have the result of something far from equitable. The example Brennan used to illustrate this point was that a lump sum tax levied on one individual would minimize the inherent horizontal inequities of any established tax system, however unjust. The author preferred the method of monetarily measuring the inequities and focused on the differences between the actual tax paid by a unit and the ‘conceptually optimal’ tax for units with that level of pre-tax income (Brennan, 1971).

Plotnick (1982) was critical of the Johnson and Mayer's numbers approach and the coefficient of variance approaches by Brennan and White and White in that the possible re-ranking across different groups of equals was not considered. Atkinson and Sandmo (1980) and Plotnick (1982) use a pseudo-Lorenz curve to establish variations in equality as a result of taxation, deriving an index from the area between *ex-ant* and *ex-post*. Plotnick's measure of horizontal inequity referred to as the pre-ordered inequality index (PII) was developed through a modified Lorenz Curve-Gini coefficient approach taking into account rankings (Plotnick, 1982). The author argued that HE addressed only the fairness of the process of redistribution (later disputed by Musgrave). The measure would register an increase in horizontal inequity (HI) if the rankings were altered by redistribution. This methodology served as a generalisation of the classic definition of HE.

Giertz and Sullivan (1978) criticised early research into the horizontal equity of homeownership, claiming that the exact nature of the inequity was obscured with respect to incidence issues, the presence of other differences in addition to the legal tenure and/or the general assumption of itemization. To overcome the first two issues, the authors made an unusual assumption in their research. They assumed that the tenant in their analysis occupies a house identical to the home of the homeowner and owns another identical home, which is rented out (i.e. the rental income in effect pays the rent). The effect of such an artifice is to establish two taxpayers of equal/identical incomes, living arrangements and net assets (Giertz and Sullivan 1978, p330). Such an assumption is made within this research for the same effect.

Giertz and Sullivan formulated the horizontal inequity resulting in the 1978 US tax law, the effect of including an imputed rental income and the effect of disallowing the mortgage interest and real estate tax deductions. They considered these scenarios for homeowners and "renter/landlords" who itemize versus claiming the standard deduction. They concluded that:

The trend toward increases in the standard deduction has had the effect of putting many taxpayers with different tenure on the same footing as if mortgage interest and property taxes were declared non-deductible (Giertz and Sullivan 1978, p336).

Rosen considered two indices in his measurement of horizontal equity: the Spearman rank correlation and the correlation measurement between the initial and final distributions. The underlying premise in this research was to define horizontal equity in terms of utility rather than ability-to-pay (Rosen, 1978).

Berliant and Strauss established an index based on “the extent to which effective rates are *different*... among all paired comparisons of taxpayers... within each income class” (Berliant and Strauss 1983, p105). Their index is derived by counting the number of comparisons deemed to be progressive, proportional and regressive and dividing the three counts by the total number of comparisons (Berliant and Strauss 1983, p107). Plotnick finds that this method suffers from the common defect of not recognising the possibility of re-ranking (Plotnick 1982, p387).

Methodology employed

The classical definition of horizontal equity calls for the similar treatment of those of similar circumstance. With respect to taxation, individuals with the same economic circumstances should bear the same tax burdens. Arguably, no two individuals are truly the same in income and utilities, and therefore the classical approach to establishing and quantifying horizontal inequity is not possible with sample data and therefore not present in the housing taxation literature. If, however, the chosen methodology is to establish ‘case families’ through micro-simulation with tax liabilities determined by relevant legislation at *fixed multiples of a single reference income level*, and then establish ‘alternative case families’ by modifying the tax calculations for the specific treatment of an alternative (i.e. the tax effect of owner-occupation), all other dissimilarities have been eliminated. In other words, a comparison may be made between two case families with identical economic circumstances, one invested in owner-occupied housing and one invested alternatively, and the differences in tax burdens will establish and quantify any horizontal inequity between the two which will be attributed entirely to the difference in the tax treatment of the two investments. Such a methodology offers an original perspective to the existing literature.

With regard to measuring horizontal equity the methodology utilised in this study includes a method established by Johnson and Mayer (1962). First, an initial

comparison of the specific annual tax obligations for each pair in each country's study will be made for a paired analysis.⁸² The pairs are homeowner occupiers (H) and alternative investors (A) and homeowner occupiers and tenant / landlords (TL) of equal income levels. Each of these comparisons will be categorized as either horizontally equitable (HE), horizontally inequitable favouring the homeowner (HH) or horizontally inequitable favouring the alternative investor (HIA). The number of occurrences in each category will be totalled and reported. The final tallies of one set of pairs (H and A) will be compared with the other set (H and TL) for a within-country comparison as well as with those determined in the other country studied for a cross-country comparison. If inequities are detected, they will be quantified by measuring the differences in tax obligations in absolute terms and with reference to average tax rates (defined in the next section).

The specific tax elements yield two sums. First, they will be totalled by income level to yield a *cumulative specific tax obligation* per case family (i.e. 20 years' worth of property taxes for the median wage earner). Second, they will be totalled to yield an *annual overall tax obligation* per case family (i.e. acquisition taxes, property taxes, income taxes and capital gains taxes in 1998 for the median wage earner). This will form a matrix in that the total specific taxes in the study will equal the total overall tax obligations at each income level thus yielding a *cumulative overall tax obligation* for each case family. The purpose of this is to compare the end results and be able to decompose those results on a specific tax basis as well as a specific time basis at each income level simulated. In mathematical terms, the sum of the specific taxes equals the sum of the overall tax obligations at each income level. Therefore, in addition to the horizontal equity analysis of the specific tax obligations, there will be a comparison of each pair's overall tax obligations and average tax rates on an annual basis and a cumulative (longitudinal) basis. This addresses the second sub-question on horizontal equity: "How horizontally inequitable is the combined overall effect of the respective housing tax policies in each country studied on an annual and longitudinal basis?"

⁸² With reference to Method 2, the comparisons are between the homeowners and alternative investors and tenant / landlords, respectively. There are 20 years, 5 levels of income and 4 specific taxes being analysed. Therefore, there will be 800 comparisons in each country studied (2x20x5x4=800).

4.5.2. Vertical equity

While horizontal equity calls for the equal treatment of equals, vertical equity calls for an appropriate differentiation of non-equals. In spite of significant debate over the last fifty years, it has been well established in the literature and generally accepted by the populace that tax systems should be progressive (i.e. the wealthy should pay a greater share of tax).

Tax systems are deemed progressive when average tax rates rise with income and regressive when average tax rates fall as income rises. If the average tax rates remain constant despite income rises and declines, then the system is deemed proportional. With consideration for the relationship between average and marginal tax rates, progressive tax systems are indicated when the average tax rates fall below the marginal tax rates. The average and marginal tax rates warrant adequate definitions before further references are made.

Average Tax Rates

The *average tax rate* may be defined as the ratio between a tax liability and the total income, gain or other determinant (i.e. property valuation or wealth) of that liability. This may be measured for a specific taxpayer or group of taxpayers and for a specific tax year or number of tax years.

The relationship between total (i.e. gross) income and taxable income is important from this point of view as the final tax liability is determined not only by the statutory tax rates, but also by the availability of exemptions, allowances, and credits. This is particularly relevant to this study as homeowner tax favouritism is presumed by reduced average tax rates resulting from concessions.

Average tax rates show the relationship between the whole of the tax and income of the taxpayer(s), whereas marginal tax rates or schedule rates refer to changes in income and the corresponding change in tax (OECD 1990, p75).

The calculation of average tax rates in this study will be tax, taxpayer and tax year specific initially. Then the overall average tax rates will be determined on the

individual taxpayer and tax year level. By analysing the data in detail and then in summary, patterns, trends and anomalies will be evident both on a within-country analysis and a cross-country analysis.

A *modified* average tax rate is required when the analysis turns from the specific to the general. This is discussed in full in a subsequent section entitled *Measuring the systems' overall progression*.

Marginal tax rates

The marginal tax rate is the change in taxes applicable to the change in income.

To illustrate the distinction between the average tax rate and the marginal tax rate, consider the UK tax structure. There is a personal allowance available to all taxpayers and three rates of taxation.

For the tax year 2009/10 the allowance and rates with corresponding income bands are as follows:

- Personal Allowance: £6,475
- Income bands and tax rates:
 - £0 - £37,400 20%
 - Over £37,400 40%

Assuming an income of £10,000 and corresponding tax liability of £705, the marginal rate of tax would be 20% (the rate at which the next pound of income would be taxed) whereas the average rate of tax would be 7% (£705 / £10,000).

To reiterate, a tax system is progressive, proportional or regressive when the marginal tax rate (MR) exceeds, equals or is less than the average tax rate (AR), and therefore:

$MR/AR > 1$: progressive

$MR/AR = 1$: proportional

$MR/AR < 1$: regressive

Measuring progressivity (indices)

While the average tax rates and marginal tax rates are capable of classifying a tax system as progressive, proportional or regressive, these are simply qualitative characteristics and say nothing of the degree of progression. When progressivity is measured in degrees, the inequities may be quantified and cross-sectional and international comparisons may be made. Measurement techniques have varied over the decades. Progressivity may be measured in terms of the average tax rates as compared with the marginal tax rates and in terms of the elasticity of the tax revenues with respect to income. Further, the degree of progressivity of a tax system may be analysed with reference to its tax structure or income redistribution effect.

Taxation and income distribution analysis commonly use methods of aggregating large amounts of information into single numbers or *indices* through statistical tools such as mean and standard deviations. As mentioned in the previous section on horizontal equity, White and White (1965), and others used the Coefficient of Variation (CoV) in their analysis.

Kiefer (1984) provided an overview of the more common measures of progressivity (indices). He categorised them as structural (what affects their numerical value) and distributional (what they measure). The distributional progressivity indices are further categorised by the measure of dispersion on which they are based (concentration indices and the concept of “equally distributed equivalent” level of income) (Kiefer 1984, p498).

Norregaard (1990) and Wagstaff and Van Doorslaer (2001) identified the main determinants of progressivity as:

1. The way in which taxable income (or other tax base) is calculated with regard to allowances, deductions, exclusions, *et cetera*;
2. The applicable progressive tax rate schedule; and
3. The tax credit structure.

These main determinants of progressivity affect both the tax structure and the distribution of the tax burden. Their effect is measurable by structural and distributional indices.

Structural indices

Structural indices are point measures of progressivity based upon the tax paid at specific points of the income scale. There are four well-known structural indices: average rate progression, marginal rate progression, liability progression and residual income progression. These measures have been thoroughly discussed in the literature beginning with Musgrave and Thin (1948). The structural indices measuring degrees of progression are simply varying mathematical expressions of the relationship between income and taxation (Musgrave and Thin 1948, p510). Three of the four structural indices are used in this research as measures of progressivity: average rate progression, marginal rate progression, and liability progression. These three structural indices are deemed informative without being repetitive. The fourth structural index, the residual income progression, is simply the inverse of the liability progression, and therefore disregarded. A complete explanation of the three chosen indices follows.

Average Rate Progression (ARP)

As explained by Musgrave and Thin (1948), ‘the degree of progression may be measured by the *rate of change in the average rate of tax*’ (Musgrave and Thin 1948, p 499):

$$ARP = \frac{\left(\frac{T_1}{Y_1} - \frac{T_0}{Y_0} \right)}{Y_1 - Y_0} \quad (7)$$

The above equation reflects the respective tax liabilities (T) for the corresponding incomes (Y) and Y_1 exceeds Y_0 . In other words, the numerator represents the change in the average tax rate and the denominator represents the change in income.

If the average rate progression calculation yields a positive result, zero or a negative result, the tax system is progressive, proportional or regressive, respectively. What is effectively being measured is the slope of a curve obtained by plotting on an arithmetic scale the average tax rates against income (Musgrave and Thin 1948, p 499 – p 450).

To illustrate this calculation assume the following:

- Tax liability in year one (T_1) = \$1,000
- Tax liability in year zero (T_0) = \$250
- Gross income in year one (Y_1) = \$10,000
- Gross income in year zero (Y_0) = \$5,000
- Average tax rate in year one (A_1) = $\left(\frac{T_1}{Y_1}\right) = 10\%$
- Average tax rate in year zero (A_0) = $\left(\frac{T_0}{Y_0}\right) = 5\%$

Average rate progression index (ARP) =

$$\frac{\left(\frac{1,000}{10,000} - \frac{250}{5,000}\right)}{10,000 - 5,000} = \frac{5\%}{5,000} = 0.001\%$$

As the result is positive (albeit a very small number), the tax system is deemed progressive. Greater ARP indices are indicative of higher levels of progression.

The average rate progression measures the degrees of progressivity at selected points on the income scale through tax data applicable to two individual case families. Given five structural points for analysis, four indices would be derived. In addition to the four indices, the ARP index is modified to yield an overall degree of progressivity each year by using the tax data for the extreme case families. For example, the tax data for UK-H½ and UK-H5 would be used to calculate the degree of progression for all homeowner occupiers being analysed.

Marginal Rate Progression (MRP)

Alternatively, *the rate change in the marginal tax rate* also measures progressivity (Musgrave and Thin 1948, p 503).

$$MRP = \frac{\frac{T_2 - T_1}{Y_2 - Y_1} - \frac{T_1 - T_0}{Y_1 - Y_0}}{Y_2 - Y_1} \quad (8)$$

Where, with respect to the above equation, $Y_2 > Y_1 > Y_0$. As with the average rate progression, if the result is positive, zero or negative, the tax system is progressive, proportional or regressive, respectively.

An equivalent statement is that the tax system is progressive, proportional or regressive when the marginal rate exceeds, equals or is less than the average tax rate. However, this is a simple conclusion on the qualitative characteristics of the tax system and not on the degree of progression, which this study seeks to establish.

The Marginal Rate Progression measures the degrees of progressivity at selected points on the income scale through tax data applicable to three individual case families. Given five structural points for analysis, three indices would be derived. As with the ARP, the analysis using the MRP index may be manipulated to yield an overall degree of progressivity each year by using the tax data for the extreme case families. For example, the tax data for US-TL½, US-TL2 and US-TL5 would be used to calculate the marginal rate progression index applicable to the tenant / landlords.

Liability Progression (LP)

The third structural index proposed by Musgrave and Thin (1948) is based on the change in the amount of tax liability, which is an expression in terms of the elasticity of tax revenues. The progressivity of a tax system may be measured by the elasticity of tax revenues with respect to income (i.e. *the ratio of the percentage change in tax liability to the concurrent per change in income*) (Musgrave and Thin 1948, p 504; Norregaard 1990, p 85 and Rosen 2005, p278).

The liability progression index may be expressed as:

$$LP = \frac{\frac{T_1 - T_0}{Y_1 - Y_0}}{\frac{T_0}{Y_0}} = \frac{T_1 - T_0}{T_0} \times \frac{Y_0}{Y_1 - Y_0} \quad (9)$$

The system is progressive if the above calculation is greater than 1 and regressive if it is less than 1.

Liability Progression, like Average Rate Progression yields four indices given five points of reference. The range for measuring the overall degree of progressivity will be from the median income level to the highest, given the several occurrences of nil, negative or very low taxation at the lowest level of income and investment. The results using such an extreme are distorting, compromising comparability.

In summary, these three indices measure the progression of the tax systems based on annual data. With reference to this particular study, the progressiveness for the transaction tax systems (both acquisition and disposition), the property tax systems and the income tax systems are analysed. The systems are measured between each successive multiple of income (i.e. H1 will be compared to H½, H2 will be compared to H1, *et cetera*) to give a comprehensive rate of progression and identify areas of greater, lesser or non-progression. In addition to determining the degree of progressivity at close intervals (i.e. between H4 and H5), the overall degree of progression is determined using the extremes in each case (i.e. between A½ and A5). A comprehensive analysis is made to establish the winners and losers with regard to the specific and overall tax policies studied and a more general analysis is made for comparability within and across countries.

With respect to the two recurrent taxes (income and property), each year is measured and compared to see changes in the progressivity of each tax system. In this study, the measures are calculated annually for purposes of pattern matching, trend analysis, and comparisons. This reflects changes in progression over the relevant time frame with respect to the tax systems studied. With respect to the transaction taxes (acquisition and disposition), the measures occur in the relevant years (i.e. the first and final years of the study).

The progressivity of the tax systems affected by homeownership is compared and contrasted to the progressivity of the existing tax systems in general (i.e. the case families with alternative investment). In so doing, one should be able to quantify the effect on progressivity solely attributed to a country's owner-occupied housing tax policies. The analysis will be extended to a progressivity comparison between homeowner occupiers and tenant / landlords in order to highlight fully the effect occupied housing subsidies have on vertical equity.

The indices are categorized as progressive (P), proportional (PP) or regressive (R). The number of occurrences in each category will be totalled and conclusions drawn on greater and lesser progression at tax specific and overall tax levels. These conclusions will be at income specific levels and with regard to the overall tax system. Once again, the matrix will be relied on to provide a complete picture of progressivity as well as decomposition by tax and by year. The progressivity at each interval will be compared with the previous level to identify where there has been an increase, decrease or no change in the degrees of progressivity. This will be done on an annual overall tax obligation level, a cumulative tax specific level and a cumulative overall obligation level.

Analysis involving structural indices is very detailed by nature. Results can vary given the differences in measurement components and the formulas themselves. The ARP index is a more reliable tool in determining progression given its grounding in averages rather than margins. While all three indices are computed and analysed, where discrepancies are found, it has been deduced that the Average Rate Progression index is indeed more reliable.

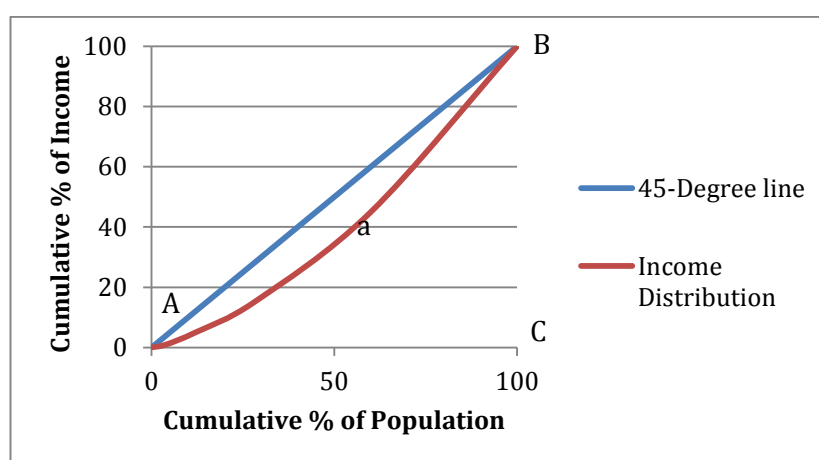
Distributional Indices

As an alternative, indices may be derived from the distribution of income as well as the tax rate structure. The distributional indices based on the concept of equally distributed equivalent level of income include Kolm (1969), Atkinson (1970), Sen (1997), Blackorby and Donaldson (1978) and Kiefer (1984). Measures based on the entire distribution of income in an economy include Musgrave and Thin (1948) who proposed the *effective progression (EP)* based on the Gini coefficients before and after taxation. Other similar measures include the Pechman-Okner Index (1974), the

Reynolds-Smolensky Index (1977), the Kakwani Index (1977), and the Khetan-Poddar Index⁸³ (1976) / Suits Index (1977).

The Lorenz curve and Gini coefficient are convenient and comprehensive methods of measuring inequality in income distribution (pre-tax income) and redistribution (post-tax or net income). The Lorenz curve is a concentration curve depicting income distributions in rank order, from poor to rich. The Gini coefficient is a derivative of the Lorenz curve.

Figure 4.2 Lorenz curve illustration



The graph depicting the Lorenz curve in Figure 4.4 reflects the accumulated percentage of the population on the horizontal axis and the accumulated per of income on the vertical axis. If there were an equal distribution of income among the population (i.e. 10% of the population received 10% of the income; 30% of the population received 30% of the income; and so on) then a 45-degree line would be depicted. When there is a less than equal distribution of income, the reflective line (the Lorenz curve) sags below the 45-degree line. The area between the Lorenz curve and the 45-degree line reflects the degree of inequality. Figure 4.4 depicts this area as equal to the area of the triangle ABC minus AaBC. The greater the inequality in income distribution, the farther the Lorenz curve bows away from the 45-degree line and the greater the area between the two lines. The Gini coefficient is defined as this area just described divided by the triangle ABC. When there is

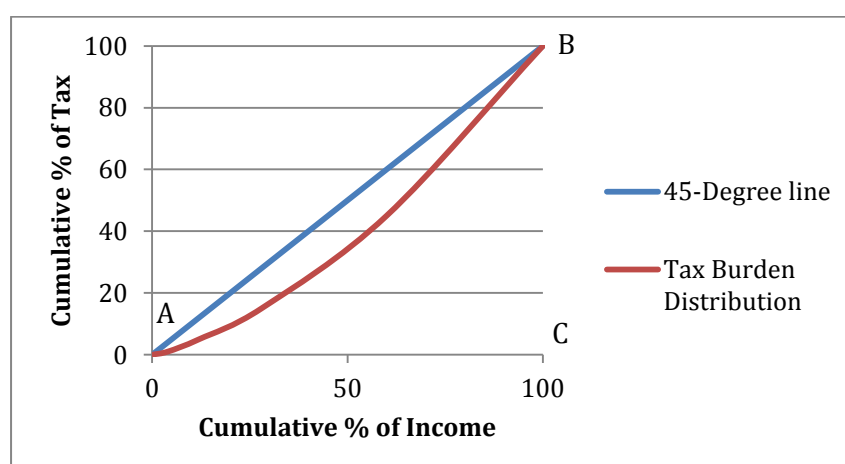
⁸³ Khetan and Poddar proposed a second measure of progression independently but similar to that proposed by Suits.

complete equality the Gini coefficient value is nil and when one unit of the population has all the income, the Gini coefficient value is equal to 1.

Aronson *et al* (1999) utilised the Lorenz curve and Gini coefficient in their analysis of equity changes in the US personal income tax between 1979 and 1990. Their methodology compared the pre-tax and post-tax income distributions and decomposed the redistributive effect derived from changes in the Gini coefficient. The authors were then able to identify the vertical effect and the horizontal effect through a concentration curve describing the post-tax distribution of income using pre-tax ranks (Aronson *et al* 1999, p143).

Suits (1977) provided a measure of the progressivity of specific taxes through a modified version of the Lorenz curve, one which plotted the accumulated percentage of tax burdens (vertical axis) against the accumulated per of income (horizontal axis). A proportional tax is reflected in the 45-degree line (i.e. 10% of the income yields 10% of the tax burden, *etcetera*). The progressivity index of such a tax would be nil. A progressive tax would sag below the diagonal and the corresponding index would be a positive fraction below +1, where +1 represents the extremely progressive tax falling on one taxpaying unit. A regressive tax would bow above the diagonal and the corresponding index would be a negative fraction above -1, where -1 represents the extremely regressive tax falling on one taxpaying unit. A graphical illustration of a Suits Curve is reflected in Figure 4.5.

Figure 4.3 Suits curve illustration



If the S curve is derived from five discrete values, the formula for the corresponding progressivity index according to Suits (1977) is as follows:

$$S_x = 1 - \left[\sum_{i=1}^5 \frac{1}{2} [T_x(y_i) + T_x(y_{i-1})] (y_i - y_{i-1}) \right] / K \quad (10)$$

The above formula first multiplies the accumulated percentage of tax burden (T) by the respective incremental differences in the accumulated percentage of income (Y). Then the sum of one-half these multiples is divided by the area of the triangle ABC (denoted by K) and then subtracted from one to yield the Suits (S) index. To reiterate, if the tax distribution is proportional, the S index would be zero. A progressive tax distribution yields a positive S index between 0 and +1. A regressive tax distribution yields a negative S index between 0 and -1.

Suits presented six taxes⁸⁴ in this manner and concluded with an overall estimation of the progressivity of the entire tax system through the weighted average of the individual indices of which the system was comprised. This is a unique feature of this particular progressivity measure.

Critics of the Lorenz curve, including Paglin (1975), focus on the 45-degree line of perfect equality. The line is underpinned by the concept that families of any age must have equal income for perfect equality to exist. This ignores the natural U-shaped curve of lifetime income reflecting new workforce entrants on low salaries, the greater earning capacities and needs of middle-aged families with dependent children, and the lesser needs of the asset-rich retired couples. Paglin proposed an alternative line of equality that reflected more accurately lifetime incomes.

Another criticism voiced by many is that the Gini coefficient is too sensitive to changes occurring around the mean of the distribution and less so to the tail ends. It is therefore recommended that the Gini coefficient is not presented as the sole measure of inequality, that it is coupled or combined with other measures that would be more sensitive to other parts of the distribution.

The use of the Suits indices serves three purposes. First, it will clearly depict the temporal changes in progression thus enhancing the reader's general understanding

⁸⁴ The US taxes as per the Pechman and Okner study (1974).

and appreciation for the effects of recent tax reforms. Second, the summation of simulation results into single measures facilitates an international comparison. Finally, this particular measure of progressivity is useful in that it is capable of yielding an overall estimation of the progressivity of an entire tax system through the weighted average of the specific indices which the system comprises, further facilitating cross-country analysis.

In contrast to the structural indices, the Suit index measures the degree of progressivity for a given tax in a given year based on the distribution of the tax burden to pre-tax income. Therefore one index is derived from the culmination of data from all five case families (i.e. UK-H½, UK-H1, UK-H2, UK-H4 and UK-H5). The structural indices measure the progressivity at given points on the income scale, two points required for the ARP and LP indices and three points for the MRP index, providing multiple indices for each year. Whereas the Suits index is more general, it is informative in its own right.

The use of the S index is often for its generalisation value, which is expressly not the aim in this methodology. The intention in this research is more of illustration and comparability of this particular study and not the generalisation of either the UK or the US tax systems. The reader is reminded that the goal of this study research is theoretical generalisation and not statistical generalisation. This is fully addressed in Section 4.3.

Final points on measuring progressivity (indices)

The superiority of one measure of progression has not emerged from the literature but Norregaard (1990) suggested the following with respect to the relative question:

If the emphasis is on the impact of taxes on the income distribution (i.e., post-tax compared to pre-tax distributions), Musgrave-type measures are preferable. If, however, progressivity is seen more a question of how the percentage distribution of taxes across deciles compares to the percentage distribution of (pre-tax) income (disregarding the size of the average tax rate), Kakwani and Suits-types of measures should be used (Norregaard 1990, p87).

Burniaux *et al* (1998) used Shorrocks, Gini, Atkinson, SCV and MLD methods of measurement in their analysis of income distribution and poverty in thirteen countries. Meng and Gillespie (1986) used the index set out by Plotnick (1981 and 1982) and Atkinson and Sandmo (1980) in their analysis of the horizontal inequities of the Canadian property tax system. They considered the taxation of property under the “new” and “old” views and utilized the five standard shifting scenarios in their work. They found that while the new view yielded greater vertical equity, horizontal inequity was increased (Meng and Gillespie, 1986). Anderson and Roy (2001) used the Suits Index in their examination of the distributional impact of potential changes to the taxation of owner-occupied housing. Ling and McGill (1992) compared average tax rates of existing tax systems to hypothetically reformed tax systems.

The total effect on distribution, therefore, depends not only on the extent of the progressive nature of particular taxes (i.e. how fast the effective rate or ratio of liability to income rises as we move up the income scale), but also on the overall level of taxation and the underlying distribution of income (Musgrave 1989, p242).

It is recognised that different measures of progressivity may yield different results and it is therefore advisable to utilise more than one measure. The structural indices are preferred when investigating the degree of progressivity on a given tax structure. The distribution indices are preferred when investigating the extent to which income is redistributed as a result of the tax system.

Measuring the systems' overall progressivity

In considering the vertical equity of the overall tax obligations, a variation on the average tax rate calculation is necessary. Initial analyses on horizontal and vertical equity call for the use of basic relationships for the specific taxes to their corresponding tax bases. The average tax rate for acquisition taxes (AT) is the ratio of taxes to the purchase prices (PP) of the assets (home, rental property or alternative investment). The average tax rates for property taxes (PT) are based on the assessment values (AHV) of the home or rental property. The average tax rates for income taxes (IT) are to total income (Y) before deductions and exemptions. And

finally the average tax rates for capital gains taxes (CGT) are based on the capital gains realised (G).

It would be incorrect to simply add together the average tax rates for the specific taxes in an attempt to derive an overall (cumulative) average tax rate as follows:

$$ATR^{overall} \neq \sum \left(\frac{AT}{PP} + \frac{PT}{AHV} + \frac{IT}{Y} + \frac{CGT}{G} \right) \quad (11)$$

A common denominator is necessary to make a logical determination of the average tax rates for overall tax obligations. Further consideration is required for the fact that two of the taxes are specific to two points in time (acquisition taxes at the beginning and capital gains taxes at the end of the study) and two are recurrent (property taxes and income taxes). The average tax rates for the *cumulative* overall tax obligations may be derived by the following formula based on Simon's concept of comprehensive income:

$$ATR^{overall} = \sum \left(\frac{AT + PT + IT + CGT}{\sum Y + G} \right) \quad (12)$$

This alternative calculation of average tax rates is necessary in determining the overall Suits indices for the three investors as weights are used to calculate the extended indices.

As each respective structural index may calculate the overall degree of progression on an annual basis using the extreme (H½ and H5) income and tax data, they may also reflect the degree of progression for the entire period studied by using *cumulative* income and tax data. The results lend themselves to the provision of respective overall progressivity indices similar to those calculated for under Suits. The weighted averages of the indices derived from the cumulative data on specific tax policies are used as well.

4.5.3. Neutrality and decomposition of tax subsidies

It is common practice in the literature regarding tax expenditure analysis to establish benchmarks against which tax policies and tax reform may be measured. This is a comparison of the tax treatment in question to an alternative or hypothetical tax

treatment. Working under the guidelines set by O’Sullivan (1986) and Flood and Yates (1989), the benchmark is initially the existing tax system as reflected by the case families not invested in owner-occupied housing (i.e. UK-A_n)⁸⁵. This will measure the inequities of the existing tax systems through a comparison with case families of identical economic circumstances invested on housing (i.e. UK-H_n). The simple equation being:

$$\text{Tax subsidy (mortgage interest relief)} = H - A \quad (13)$$

However, this is too simple with respect to the tax subsidies of owner-occupied housing as it disregards the call for imputed rental income and capital gains taxation, both of which are demanded in terms of neutrality. The above equation yields the tax subsidy specific to provision of mortgage interest relief. A more comprehensive measure would be through a comparison of the homeowner occupiers with case families invested in rental real estate of equal value and economic circumstance (i.e. US-TL_n). This difference would yield the overall tax subsidy:

$$\text{Tax subsidy (overall)} = H - TL \quad (14)$$

An alternative set of measures that will be used in support of the original analyses as well as a basis for a more detailed study, is obtained through stepped modifications for neutrality. The other reason for pursuing this line of analysis is to satisfactorily answer the third research question of how each country’s equity would be affected under more neutral tax regimes. This methodology provides the complete picture through decomposition.

Once the initial measurements are made, the tax calculations for the case families invested in housing will be systematically modified three times, each time reducing tax distortions with regard to the generally accepted principles (GAP) and alternatives in tenure (TnN) and investment (TxN). This recognised method of measuring the tax subsidies associated with owner-occupied housing will ensure a complete and comparative analysis. The first step is clearly defining the subsidies within each country’s tax system.

⁸⁵ Where ‘n’ is representative of the five levels of income.

United Kingdom: The UK recognises owner-occupied housing as a consumable product in that it does not tax net imputed rental income and it does not tax the capital gain. As a consumption product, the system correctly ignores mortgage interest and other housing costs as deductions. The reader is reminded however, that Mortgage Interest Relief at Source is available to homeowners during the first half of the study period (1990/91 through 1999/00). Therefore, the departure with respect to the UK is the allowance of mortgage relief in the first ten years of the study. However, for comparative purposes and a more acceptable reflection of societies' attitudes, the UK simulations will consider the family home also as an investment and consider the impact of imputed rental income and capital gains taxation.

United States: The US recognises owner-occupied housing as an investment in that it allows mortgage interest and real estate tax deductions and it taxes the capital gain in excess of the exemption. As an investment, the departures are the omission of imputed rental income in the income tax base and the exemption from capital gains taxation for the majority of homeowners.

Generally accepted principles and variation 1 (V1)

United States: In the US, the allowances of mortgage interest and real estate tax deductions are departures from generally accepted principles in that investment interest and other investment costs are allowed only to the extent that they offset any investment income or gains recognised. As the principle residence does not yield an annual income (i.e. an imputed rental income) and the fact that the majority of homeowners will be exempt from capital gains taxation, the allowance of mortgage interest and real estate tax deductions are obvious subsidies.

United Kingdom: In the UK, the provision for mortgage interest relief through MIRAS is a departure from generally accepted policy in that no such relief is available to investors in residential rental real estate or other capital investments that are similarly financed.

The US and UK homeowner occupiers' simulations will be recomputed removing the interest relief from the original calculations in the first variation (V1). The original homeowner case families whose liabilities reflect the current respective tax systems will be designated as *baseline* (BL) and the recomputed case families will

carry the designation *generally accepted policy* (GAP). In other words, this variation on the original (baseline) simulations of the existing tax system imposes the ‘generally accepted’ criteria where investment and personal interest are not deductible in the existing tax system.

On completing the V1 analysis, the research question ‘how much of the inequities are attributed to the mortgage interest reliefs?’ may then be answered. These results will be compared with the results obtained under the original simulation with a comparison of homeowner occupiers and alternative investors (i.e. equation 13)

Tenure neutrality and variation 2 (V2)

The next variation (V2) will be with regard to tenure neutrality. An imputed rental income, net of housing costs including the mortgage interest and real estate taxes, will be added to the homeowners’ annual income and the tax liabilities will be recomputed accordingly. Consideration is given to each country’s respective tax policies on calculating rental activity income, deductible expenses, and the recognition and/or restriction of rental losses.

On completing the V2 analysis, the research question ‘how much of the inequities are attributed to the absence of imputed rental income?’ may then be answered.

Tax neutrality and variation 3 (V3)

The third and final variation (V3) will be with regard to tax neutrality. In addition to the inclusion of imputed rental income in the income tax systems, the capital gains realised by the homeowners will be calculated and considered taxable as any other long-term capital asset.

On completing the V3 analysis, the research question ‘what would the outcome be if both imputed rental income and capital gains are taxable to the homeowners?’ may then be answered. These results will be compared with the results obtained under the original simulation with a comparison of homeowner occupiers and tenant / landlords (i.e. equation 14).

The overall tax subsidy realised by homeowner occupiers equals the difference between the tax obligations calculated under the existing tax systems (baseline) for

the case families invested in housing and the tax obligations recalculated for the same families under the final variation for tax neutrality (V3). To illustrate, the overall tax subsidy for the US case family with median wage income equals:

$$\text{Tax Subsidy (overall)} = \text{US-H1}_{(\text{BL})} - \text{US-H1}_{(\text{V3})} \quad (15)$$

The overall subsidy may be decomposed to the portions related to a generally accepted policy (GAP), tenure neutrality (TnN) and tax neutrality (TxN) as follows:

Tax subsidy (GAP) – related to the mortgage interest relief:

$$\text{Tax Subsidy (mortgage relief)} = \text{US-H1}_{(\text{BL})} - \text{US-H1}_{(\text{V1})} \quad (16)$$

Tax subsidy (TnN) - related to the omission of imputed rental income:

$$\text{Tax Subsidy (IRI)} = \text{US-H1}_{(\text{V1})} - \text{US-H1}_{(\text{V2})} \quad (17)$$

Tax subsidy, tax neutral (TxN) – related to the omission of capital gains tax:

$$\text{Tax Subsidy (CGT)} = \text{US-H1}_{(\text{V3})} - \text{US-H1}_{(\text{V2})} \quad (18)$$

Tax subsidy, overall – adjusted for imputed rental income and capital gains:

$$\text{Tax Subsidy (Overall)} = \text{US-H1}_{(\text{BL})} - \text{US-H1}_{(\text{V3})} \quad (15)$$

The decomposition may be expressed in absolute terms and as a percentage to the overall subsidy facilitating comparisons at the various income levels as well as on an international basis.

With the modified set of tax calculations, the progressivity measures may then be recalculated (for each variation) and the effect of each respective subsidy on progressivity may be established. In other words, the impact owner-occupied housing has on the progressivity of a given tax system may be decomposed.

4.5.4. Trend analysis

The final research question is how the recent respective tax reforms regarding owner-occupied housing tax policies have affected tax equity, specifically querying whether these changes have improved or hindered horizontal and/or vertical equity.

Chapter 3 summarises the specific policy modifications and reforms that occurred during the twenty-year period studied in the two countries. These include the introduction of the Stamp Duty Land Tax and the Council Tax, the phase out and final abolition of Mortgage Interest Relief at Source (MIRAS) and several changes to the capital gains tax system in the UK. In the US a significant reform regarded the capital gains taxation of the family home. Modifications to the standard deduction, the alternative minimum tax and capital gains tax calculations indirectly but significantly impact the homeowners' tax benefits. Phase-out computational modifications of itemized deductions have a more direct effect.

Both countries' capital gains tax regimes are of particular interest with regard to this research question, as well as the acquisition taxes in the UK. As these taxes are 'one-off' taxes occurring at the beginning and end of the tax cycle of the family home, the simulation will be modified to reflect the effect of the specific changes as well as the trends of overall taxation. The methodological choice is to simulate shorter periods of time on a rolling and continuous basis. The number of years is discretionary and it is determined that a five-year rolling simulation provides the necessary level of detail to ensure complete analyses and accurate conclusions.

There are sixteen 5-year periods falling within the 20-year period of study (i.e. 1990 through 1994, 1991 through 1995, 1992 through 1996, etc.). The assumption is simply that the families purchase their respective investments at the beginning of one tax year and sell them at the end of the fourth tax year, holding those investments for five years in total. The assumptions underpinning the original simulations largely remain the same. The median wage income in 1990 with a 3% annual growth determines the revised income and investment values for all subsequent years. The user cost percentages determining rental income for the tenant / landlords remains the same. Annual mortgage interest expenses for the homeowners and tenant / landlords are recalculated based on the revised debt obligations. Depreciation for the US tenant / landlords are recalculated, recognising the revised house values. Given the relatively short investment periods, additional investments by the alternative investors in the years subsequent to the initial year are not assumed in these simulations. The time value of money is also ignored; all monetary values are stated in current terms.

The analysis is on a country-specific and tax-specific basis with overall tax obligations considered on conclusion. Horizontal equity and vertical equity will be considered in the same manner and order as established in Chapter 6 (An evaluation of vertical equity).

The horizontal equity is considered in terms of whether or not there is equity (no differences), and if not, which investor is favoured. The frequencies of the three possible classifications (horizontal equity, horizontal inequity favouring the homeowners and horizontal inequity favouring the other investors) are totalled and summarised in a table that depicts the sums of both investors in both countries. This side-by-side reflection allows for direct comparisons to be made on a within-country and cross-country basis. Where horizontal inequities are detected, the differences are summarised in current monetary terms and reflected in tables and/or graphs. Reviews of the average tax rates will also be provided in comparisons with other investors and on reflection of the changes occurring over time and as a result of reform.

The vertical equity of the specific taxes will first be considered on a qualitative characteristic basis and how they have changed as a result of tax reforms and modifications. The measurement of progressivity will be limited to the Average Rate Progression and Suits indices as these measures provide the most reliable and concise results on progression. The transactional taxes that occur at the beginning and the end of each 5-year interval will be measured yielding 16 measures each. Property taxes will not change from the original simulation and therefore the reader may refer to Chapter 6 for annual details. The annual income taxes for the tenant / landlords in both countries and the homeowner occupiers in the US will alter in each successive five-year interval, yielding 400 annual recalculations in each country. For this reason, the recurring taxes (property and income taxes) will be summarised in cumulative terms and measured accordingly thus also yielding 16 progressivity measures each. This provides sufficient information for trend analysis. Any significant changes are investigated from the annual detail and reported accordingly.

4.6. Conclusion

The methodology used consists of multi-layered comparative micro-simulations. The two main units of analysis are representations of two countries' tax systems: the US and the UK. Within each country are multiple holistic sub-units (i.e. individual case families). The specific tax policies analysed are the acquisition taxes, property taxes, elements specific to housing affecting income taxes and capital gains taxes. In addition to the specific tax policies, the overall tax obligations (the sum of the four specific taxes) are considered.

Equity is considered from two perspectives: (1) horizontal equity assuming the classical definition of same tax burdens for those of same circumstance and (2) vertical equity, which is concerned with an appropriate differentiation of unequals. Both equity perspectives are considered in qualitative and quantitative terms.

The four research questions from Section 4.4.1 of this chapter are addressed in the next four chapters: Chapter 5 (An evaluation of horizontal equity); Chapter 6 (An evaluation of vertical equity); Chapter 7 (Equity effects from increased neutrality and a decomposition of subsidies); and Chapter 8 (Trend Analysis).

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Chapter 5: An evaluation of horizontal equity

The first research proposition is that tax equity should be determined on a horizontal basis. With regard to this analysis, horizontal equity is evaluated with reference to specific taxation⁸⁶ and overall taxation, on an annual and a cumulative basis. The first research question and sub questions regarding horizontal equity are:

Research Question 1: How horizontally inequitable are the owner-occupied housing tax policies in each country studied?

- How horizontally inequitable are the specific tax policies of owner-occupied housing in each country?
- How horizontally inequitable is the combined overall effect of the respective owner-occupier housing tax policies in each country on an annual and longitudinal basis?
- How does the horizontal equity of one country's specific tax policies and the overall tax impact compare with the other country studied?

One of the main reasons for choosing the representative agent micro-simulation technique⁸⁷ is to ensure an accurate evaluation of the horizontal equity (or inequities as the case may be) of the respective tax systems in the UK and the US. Unlike White and White (1965), Aaron (1970), and Meng and Gillespie (1986) who evaluated the horizontal equity of housing taxation under the re-ranking approach, this analysis considers Sidgwick's classic definition of the equal treatment of equals. Many acknowledge this simple rule of equity as basic and fundamental. Musgrave (1990) referred to horizontal equity as the "end state principle" in a paper that reconsidered his earlier opinion on the principle (Musgrave, 1959). Also, horizontal equity and neutrality call for the same treatment with regard to housing taxation as suggested by the OECD (2003).

⁸⁶ The specific tax policies considered are acquisition taxes, property taxes, relevant income tax factors and capital gains taxes.

⁸⁷ The reader is referred to Section 4.5.1 (Methodological development – in general) and Section 4.5.2 (Calibration of the micro-simulations – research specific) of Chapter 4 (Methodology) for a discussion on this technique.

Figure 5.1 **The analytical steps underpinning chapter 5 (page 1 of 3)**

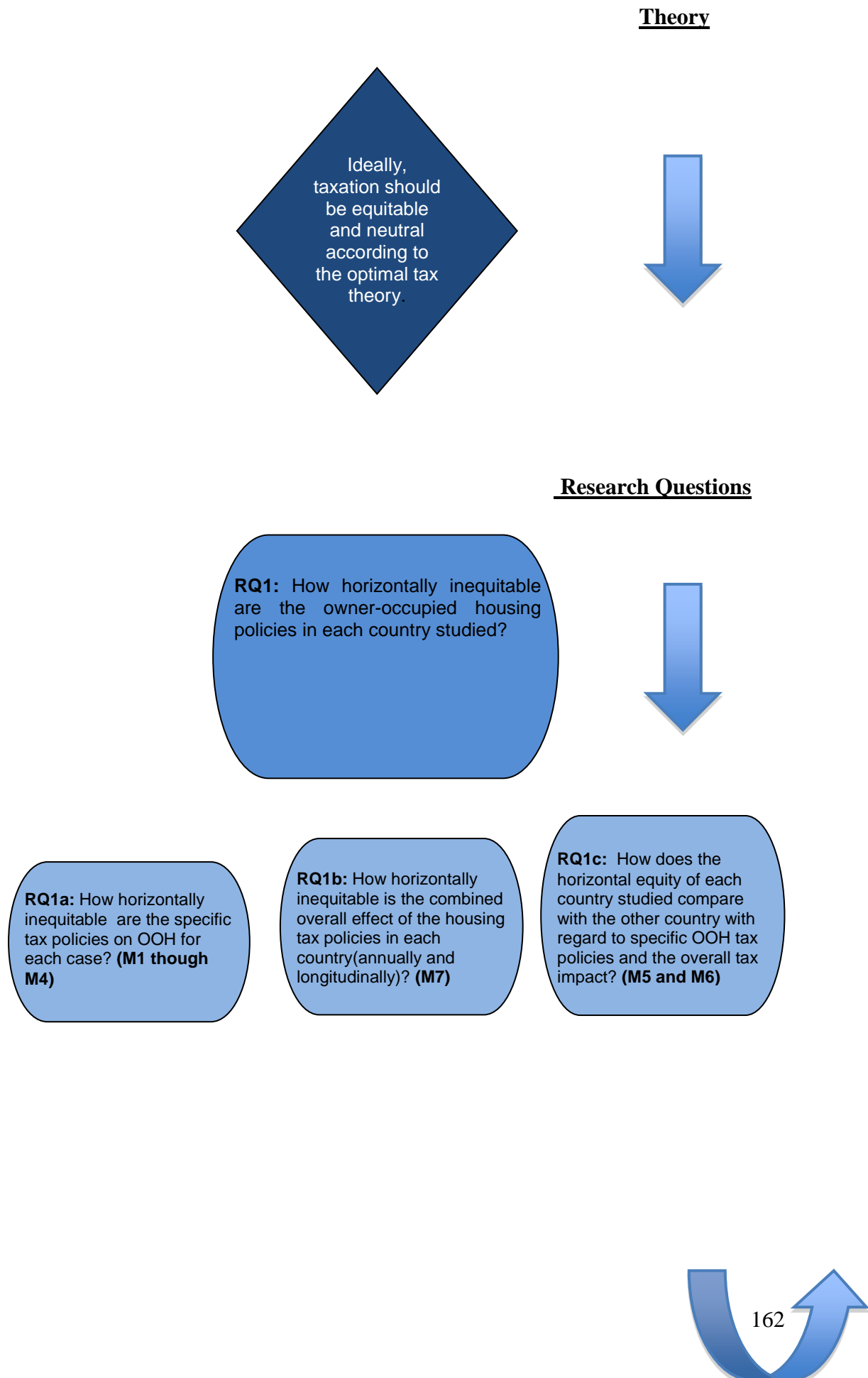


Figure 5.1 The analytical steps underpinning chapter 5 (page 2 of 3)

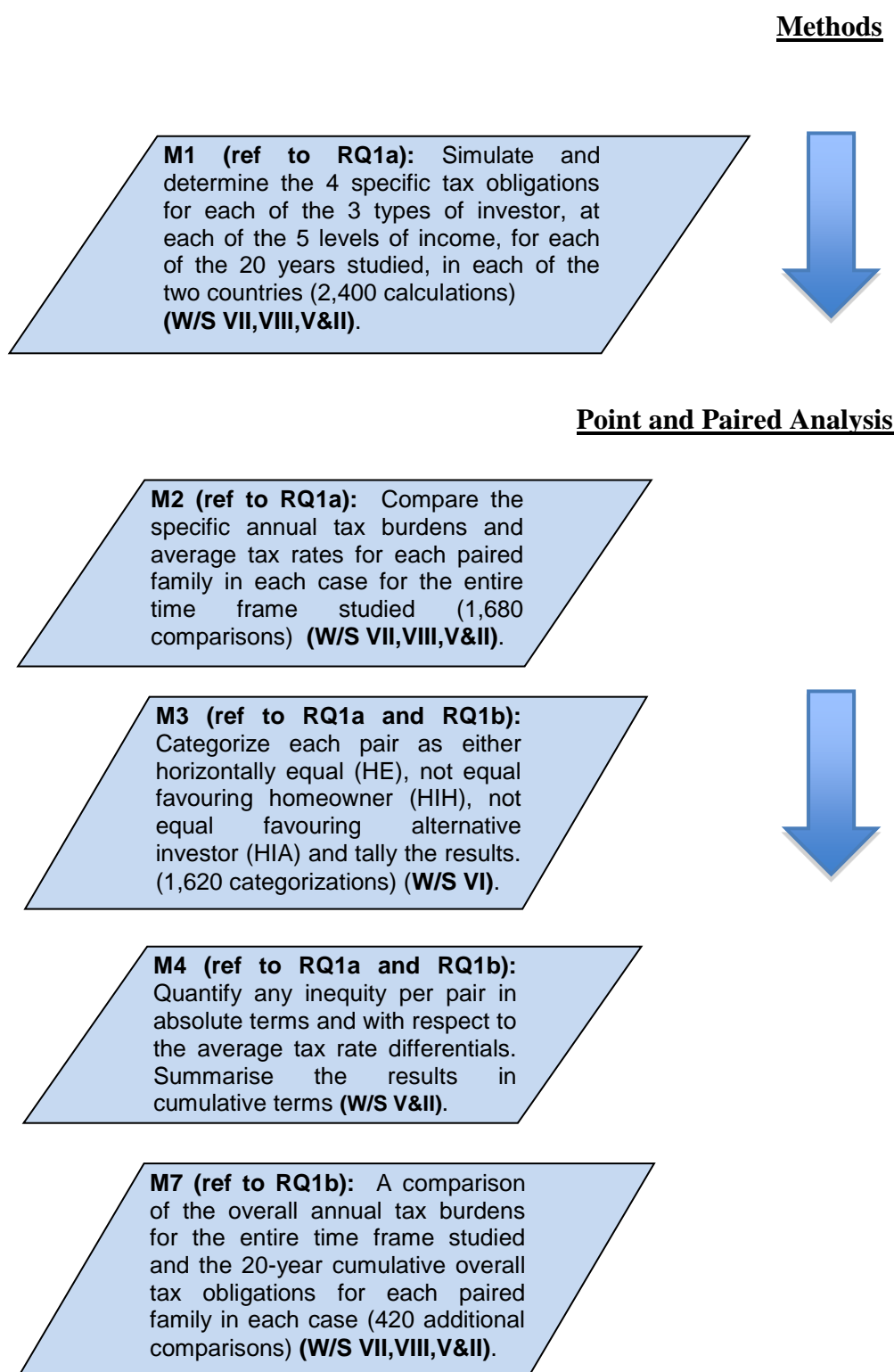
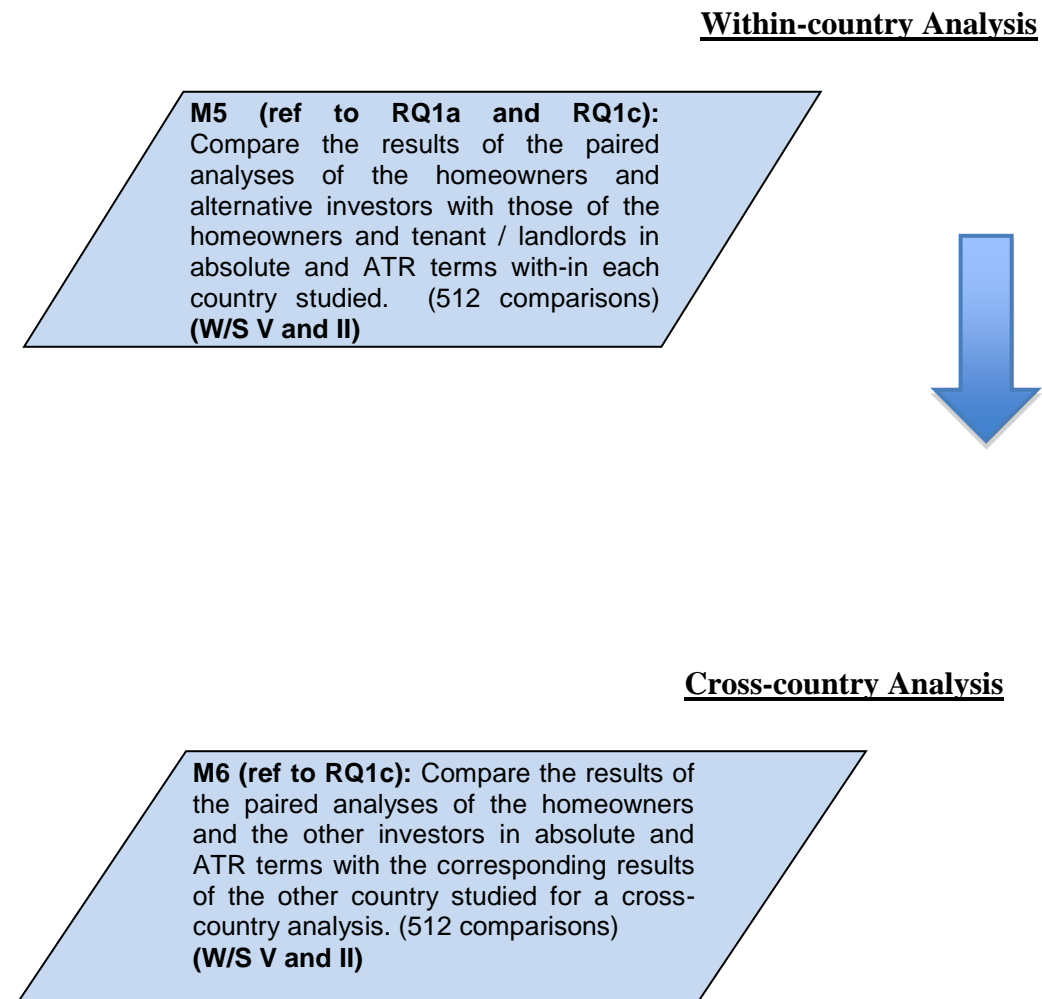


Figure 5.1 The analytical steps underpinning chapter 5 (page 3 of 3)



5.1. Horizontal equity: results

The purpose of this section is to answer the aforementioned research question and sub-questions on horizontal equity. The analysis is both qualitative and quantitative in approach. Each country is considered independently initially and then comparatively on conclusion.

A diagram of the first three steps of the deductive process⁸⁸ undertaken in this phase of the research is provided in Figure 5.1. This section begins with an overview of the methodology applicable to horizontal equity evaluation with footnoted references to the seven specific methods (M1 through M7) found in Figure 5.1. The findings (i.e. Step 4 in the deductive process, with reference to Figure 4.1) are then reported in the tax-specific sub-sections (i.e. Sections 5.1.1 through 5.1.5), with conclusions, comparisons and contrasting results at the end of each sub-section. Finally, the relevant research question and sub-questions are answered in Section 5.2, thus concluding the deductive process in evaluating horizontal equity.

The simulation results⁸⁹ are initially analysed on a qualitative basis by determining whether the results show horizontal equity or inequity favouring a particular type of investor. If the tax liabilities for corresponding (equivalent) investors as calculated in the micro-simulations are equal, there is horizontal equity. If a liability is greater or less than that of the liability of the equivalent alternative investor, there is an inequity even if the difference is one UK pound sterling (£1) or one US dollar (\$1). The comparisons are made between the homeowners and tenant / landlords and the homeowners and alternative investors.⁹⁰ No comparisons are made between the tenant / landlords and the alternative investors as the objective of this research is the equity evaluation of homeowner occupiers' tax policies. This methodology is reflective of the *paired analysis* established by Maylor and Blackmon (2005) and discussed in Section 4.4.

⁸⁸ The reader is reminded that a deductive process begins with a theory, develops research questions and then collects data (referenced to Figure 4.1).

⁸⁹ The reader is referred to M1 of Figure 5.1.

⁹⁰ The reader is referred to M2 of Figure 5.1.

Results from the initial qualitative analysis are summarised in terms of frequency (occurrences).⁹¹ This approach is based on the methodology of Johnson and Mayer (1962). Given the five levels of income and investment and the twenty-year study period, there are 100 possible measures of horizontal equity and/or inequity for each of the four specific taxes and the overall taxes for each pair of investors.

Quantifying the inequities in monetary (absolute) terms and with regard to average tax rates then extends the analysis. The results are summarised with regard to cumulative tax obligations.⁹² This approach is inspired by the methodology established by Berliant and Strauss (1983). Monetary differences are considered in terms of *current money* and *constant money*. Current monetary units reflect the monetary value at the relevant point in time, without regard for the time value of money (i.e. future value factors have not been applied). Constant monetary units reflect the monetary values with consideration for the time value of money. Future value factors are applied to liabilities in preceding years to yield equivalent values in 2009.

Once the paired analyses have been completed, the results of one set of pairs (e.g. the differentials between the UK homeowner occupiers and the UK alternative investors) are then compared with the other set of pairs (e.g. the UK homeowner occupiers and the UK tenant / landlords).⁹³ This is in accordance with the *within-country analysis* as established by Maylor and Blackmon (2005) and discussed in Section 4.4.4.

The final analysis is to compare the results from one country's study (e.g. the differentials between the UK homeowner occupiers and the UK alternative investors) with those of the other country's study (e.g. the differentials between the US homeowner occupiers and the US alternative investors).⁹⁴ This is in accordance with the *cross-country analysis* as established by Maylor and Blackmon (2005) and discussed in Section 4.4.4.

Once the specific taxes have been analysed fully, there is consideration for the overall taxation of the investors. The overall tax obligations are the sum of the

⁹¹ The reader is referred to M3 of Figure 5.1.

⁹² The reader is referred to M4 of Figure 5.1.

⁹³ The reader is referred to M5 of Figure 5.1.

⁹⁴ The reader is referred to M6 of Figure 5.1.

specific tax obligations. The paired analysis of overall taxation is from both annual and longitudinal perspectives.⁹⁵ The steps of analyses (M3, M4, M5 and M6) as outlined earlier with regard to specific tax analyses are replicated for the overall tax analysis. The one variation discussed in the following paragraph is with regard to the average tax rate calculations.

As with the specific tax analysis, the overall taxes of the pairs are categorised into horizontal equity, inequity favouring the homeowner occupiers or inequity favouring the alternative investors. The 100 points of comparison are tallied and discussed. The inequities are quantified in terms of absolute monetary differences. The average tax rate of the cumulative (twenty-years of taxation) overall tax obligation are determined by a comprehensive income denominator which is the sum of the annual income and the capital gain realised in the final year.⁹⁶

A cross-country analysis of the overall tax obligations is the final analysis on horizontal equity. The absolute monetary differentials (under a common currency) and the average tax rate differentials calculated within the simulations and the results are discussed herein.

5.1.1. Acquisition taxes

The UK and the US treat investors in property for the purpose of homeownership identically as investors in property for rental activity under their respective acquisition tax systems. The two countries do however differentiate between investments in real estate and investments in financial instruments with regard to acquisition taxation.

Both countries' results from the initial analysis are summarised in Table 5.1. This reflects the number of occurrences of horizontal equity, horizontal inequity favouring the homeowner occupiers and horizontal inequity favouring the other investors (e.g. alternative investors or tenant / landlords) with regard to acquisition taxation during the twenty-year period in both countries. There are 100 points of comparison in total between homeowner occupiers and alternative investors, and 100

⁹⁵ The reader is referred to M7 of Figure 5.1.

⁹⁶ The reader is referred to Section 4.6.2 (Measuring the system's overall progressivity) of Chapter 4 (Methodology) beginning on page 124 for a full discussion on the overall average tax rate calculation using a comprehensive income denominator.

points of comparison between homeowner occupiers and tenant / landlords in each country.

Table 5.1 A summary of the equity frequencies of acquisition taxes

Homeowners (H) vs. Other Investors (A and TL)				
Country	Investor	Horizontal Equity	Horizontal Inequity (Favouring the homeowner)	Horizontal Inequity (Favouring the other investor)
United Kingdom	UK-A	0	96	4
	UK-TL	100	0	0
United States	US-A	95	0	5
	US-TL	100	0	0

Sources: Worksheets VI (Horizontal Analysis), AZ-BB136. And V-X136.

The 100 occurrences of horizontal equity in both the UK and the US with respect to the taxation of homeowner occupiers and tenant / landlords is reflected in Table 5.1. The obvious variation in the two countries' tax systems occurs between the property investors and the alternative investors (e.g. those invested in financial securities), where most of the inequities favour the homeowner occupiers in the UK in contrast with the horizontal equity in the US. The details of the respective countries' acquisition tax systems and the quantified results of the simulations are discussed in the following country-specific sub-sections.

United Kingdom

In 1990/91 the acquisition tax (Stamp Duty) was 1 per cent on the value of homes in excess of £60,000. The stamp duties incurred by individuals investing in a home,

whether for occupation or to let, were the same. Therefore there is horizontal equity between these two individuals.

The individuals investing alternatively in financial instruments incur an ad valorem tax known as Stamp Duty Reserve Tax (SDRT) of 0.5% on acquisitions, without a threshold or rounding⁹⁷. In the initial year of acquisitions, with the exception of the lowest income earner investor (UK-A½), the alternative investors pay less tax for two obvious reasons: the respective rate differential (0.5 per cent) and the tax assessment on the full value of residential real property regardless of financing. As the SDLT has no threshold (unlike the stamp duties imposed on the homeowners and tenant / landlords), UK-A½ incurs a tax obligation in the initial year whereas UK-H½ and UK-TL½ do not. Therefore, there is one occurrence of horizontal inequity favouring the homeowner (UK-H½) and four occurrences of horizontal inequity favouring the alternative investors (UK-A1 through UK-A5) in the first year of the study.

In the subsequent years, as the alternative investors make further annual investments throughout the study period thereby incurring regular taxation (SDRT) on their acquisitions, the result is horizontal inequities favouring the homeowners at each level of investment for the remaining 19 years of study. In summary, there are 95 subsequent occurrences of horizontal inequity favouring the homeowners when the homeowners incurred no acquisition taxes as compared with their equivalent alternative investors. The summary of equity frequencies for UK acquisition taxes is provided in conjunction with the US results in Table 5.1 previously reported.

The total additional tax incurred by the UK homeowner occupiers (and tenant / landlords, as they incurred an equivalent tax) as compared with the alternative investors is summarised in Table 5.2 in both current and constant monetary terms. Quite simply, the tax liabilities for the alternative investors are subtracted from the tax liabilities of the corresponding homeowner occupants to quantify the horizontal inequities at each level of income and investment as determined by the absolute monetary differences. Where the difference is negative (e.g. UK-1/2), the greater tax obligation rests with the alternative investor.

⁹⁷ See HMRC's Stamp Duty, page 7 section 1.21 at <http://www.hmrc.gov.uk/so/manual.pdf>.

Table 5.2 Additional UK acquisition taxes paid by property investors (homeowner occupiers and tenant / landlords) over alternative investors

Income Multiples	Property investors (H and TL) <small>Pages 3-8</small>	Alternative investors (A) <small>Pages 15-20</small>	Differences (Current £) <small>Pages 27-32</small>	Differences (Constant £) <small>Pages 33-38</small>
1/2	£0	£57	-£57	-£88
1	425	114	311	569
2	850	448	402	838
4	1,700	1,058	642	1,607
5	<u>2,125</u>	<u>1,324</u>	<u>801</u>	<u>2,008</u>
Cumulative	<u>£5,100</u>	<u>£3,001</u>	<u>£2,099</u>	<u>£4,934</u>

Appendix II (Summaries of Specific and Overall Taxes), various pages referenced.

With respect to average tax rates, the homeowner occupiers and tenant / landlords incur a flat 1% tax at all levels of investment with the exception of the lowest tiers (UK-H½ and UK-TL½). At the lowest level of investment, the threshold is not surpassed and those investors are exempt from such taxation. The alternative investors incur a flat 0.5% rate on all investments and funds reinvested. In conclusion, the average rate differential between UK homeowner occupiers and alternative investors is 0.5% at all levels of income and investment. The differential favours the homeowner occupier at the lowest tier (UK-H½) and then favours the alternative investors at all other levels of income and investment.

United States

The acquisition taxes⁹⁸ incurred by individuals investing in a home for occupation or rental purposes in most states within the US are the same. Therefore there is horizontal equity between these two investors. The individual investing alternatively in financial instruments does not incur acquisition taxation at all. The horizontal inequity in this situation favours the alternative investor at all levels of income and investment in the first year. The absolute differences in current and constant monetary terms between the homeowner occupiers and the alternative investors at each level of income and investment are summarised in Table 5.3. Again, this is determined by subtracting the alternative investors' tax liabilities from those of the homeowner occupiers.

⁹⁸ A flat rate of 0.5% is assumed in the simulation, reflective of the national average.

Table 5.3 Additional US acquisition taxes paid by property investors (homeowner occupiers and tenant / landlords) over alternative investors

Income Multiples	Property investors (H and TL) <small>Pages 63-68</small>	Alternative investors (A) <small>Pages 75-80</small>	Differences (Current \$) <small>Pages 87-92</small>	Differences (Constant \$) <small>Pages 93-98</small>
1/2	\$234	0	\$234	\$411
1	469	0	469	822
2	938	0	938	1,644
4	1,874	0	1,874	3,287
5	<u>2,344</u>	<u>0</u>	<u>2,344</u>	<u>4,110</u>
Cumulative	<u>\$5,859</u>	<u>\$0</u>	<u>\$5,859</u>	<u>\$10,274</u>

Appendix II (Summaries of Specific and Overall Taxes), various pages referenced.

The US tax rate differential is quite simply the 0.5% tax rate applicable to property investors. This remains constant at each level of investment.

Conclusions, comparisons and contrasting results

Both the UK and US homeowner occupiers and tenant / landlords are horizontally equal within their respective tax systems as property investors incur the same tax liabilities. Differences occur between the countries' respective sets of homeowners and alternative investors.

In the UK simulation, the alternative investors incur acquisition taxes on their initial investments, subsequent investments and, in certain circumstances, reinvestments. These 0.5% tax assessments narrow the monetary gap between the UK homeowner occupiers and the alternative investors. The US alternative investors do not incur acquisition taxes, nor is there an exemption available for the lower tiered homeowners. The result is greater horizontal inequities within the US system as compared with the UK system, in spite of the fact that the rate differentials are the same. This is illustrated by a monetary comparison in Table 5.4 of horizontal inequities quantified earlier in Tables 5.2 and 5.3. In order to make this monetary comparison, a common currency is assumed. The US dollars are translated to UK pounds with a £1 = \$1.60 exchange rate.

Table 5.4 A comparison of the income tax differentials between homeowner occupiers and alternative investors in absolute monetary terms using a common currency (UK£)

Income Levels	US Acquisition Tax Differentials (US\$) ⁹⁹	US Acquisition Tax Differentials (UK£)	UK Acquisition Tax Differentials (UK£) ¹⁰⁰	Differences between US and UK (UK£)
1/2	\$234	£146	-£57	£203
1	469	293	311	-18
2	938	586	402	184
4	1,874	1,172	642	530
5	2,344	1,465	801	664
Cumulative	<u>\$5,859</u>	<u>£3,662</u>	<u>£2,099</u>	<u>£1,563</u>

With the exception of the median level of income and investment, the greater acquisition tax differentials between property investors and alternative investors are detected within the US. The net cumulative difference of £1,563 reflects the additional acquisition tax obligations of the US homeowners over the UK homeowners. It must be emphasised that this is not a direct comparison of tax liabilities, but of the tax differentials between property investors and alternative investors with respect to the two countries studied. To accurately compare the actual tax liabilities, the differences in investment acquisition costs must be acknowledged. This however is not the objective of the study. Rather, the horizontal inequities between investors in the two countries demands focus on the absolute and rate differentials.

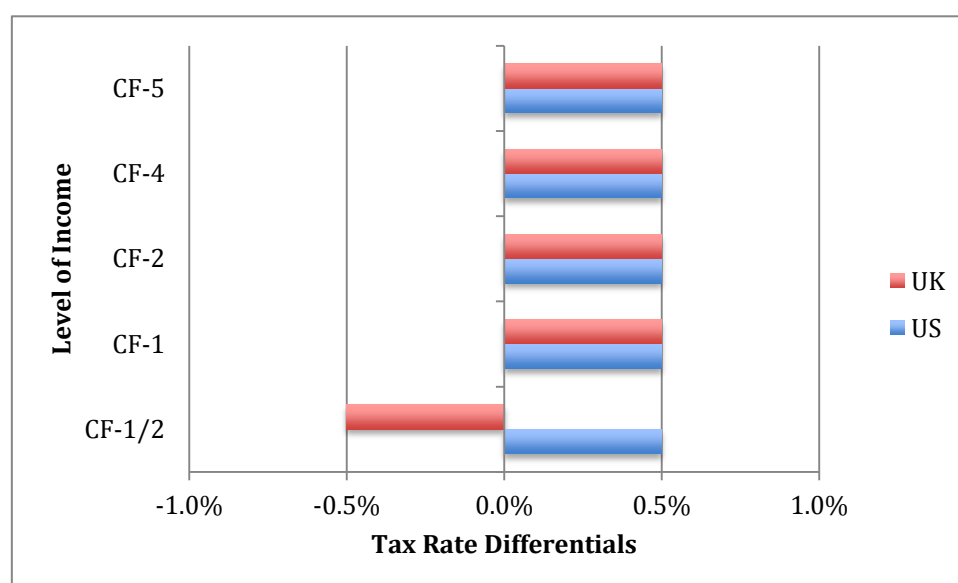
With the exception of the lowest tiered UK investors, the rate differentials between the property investors and alternative investors is 0.5%, erring of the side of the property investors in both countries. The exemption for the lowest tiered UK homeowner occupiers results in the same 0.5% rate differential, but erring on the side of the UK alternative investor. This is reflected in Figure 5.2, which views the rate differentials from the perspectives of homeowner occupiers. The rate differential assumed by the homeowner occupiers is depicted as a positive 0.5% and

⁹⁹ The reader is referred back to Table 5.3 for this detail.

¹⁰⁰ The reader is referred back to Table 5.2 for this detail.

the rate differential assumed by the alternative investor is depicted as a negative 0.5%.

Figure 5.2 Tax rate differentials between homeowner occupiers and alternative investors at all income levels in both countries



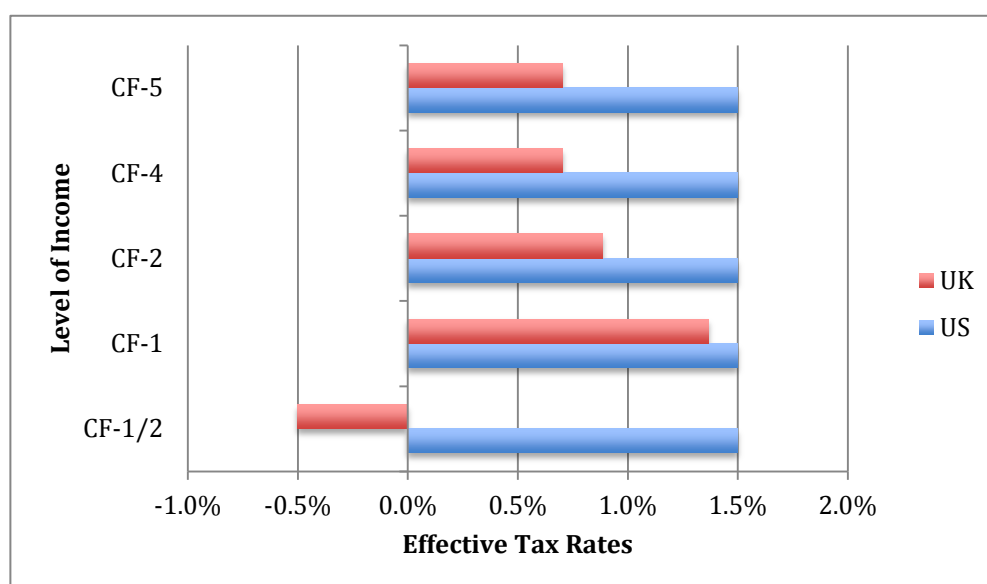
Appendix I (Chapter 5 Figures), page 1

A comparison of the effective tax rates based on the relationship of the total acquisition taxes to total invested equity further highlights the horizontal inequities of both countries. The total invested equity for property investors (i.e. homeowner occupiers and tenant / landlords) is the sum of the initial investments and the principal repayments of all subsequent mortgage payments simulated in the respective countries' studies. The total invested equity for alternative investors is the sum of the initial investments (i.e. equivalent to the property investors) and the subsequent additional investments assumed within the respective countries' studies. The purpose of this particular comparison is to highlight the fact that acquisition taxation is assessed on very different tax bases with regard to investors of real property and investors of stocks and securities. The majority of the tax base assumed by a property investor is subsidised through mortgage financing. While the three types of investors within the simulations have the same initial equity investment and equivalent subsequent equity contributions, the acquisition tax (and indeed ultimately the capital gains tax) is assessed on the full value of the property bought (and sold), including the element financed by debt.

The effective tax rates for the property investors in the US are 1.5% at all levels of investment. The US alternative investors are assumed to be exempt from acquisition taxation in the simulation. Therefore the effective rate differential in the US is 1.5% at each of the five levels of income and investment.

With the exception of the lowest tiered UK property investors (UK-H¹/₂ and UK-TL¹/₂) who do not incur tax liabilities given the applicable threshold of taxation, the effective tax rates for the property investors in the UK are 1.9% at all other levels of investment. The effective tax rates for the UK alternative investors vary. The two lower-tiered families (UK-A¹/₂ and UK-A1) have effective tax rates of 0.5%. The higher-tiered families incur higher effective tax rates due to the reinvestment of proceeds realised through a capital gains tax planning technique, which is discussed at length in Section 5.1.4 of this chapter. The resulting effective rates are 1.0% for the case family UK-A2 and 1.2% for the two highest income earners / investors (UK-A4 and UK-A5). The effective tax rate differentials are therefore 0.5% favouring the property investors at the lowest level of income and investment (UK-H¹/₂ and UK-TL¹/₂), 1.4%, 0.9%, 0.7% and 0.7% favouring the alternative investors at the higher levels of income and investment (UK-A1, UK-A2, UK-A4 and UK-A5, respectively). The effective tax rate differentials are reflected in Figure 5.3.

Figure 5.3 Effective tax rate differentials between homeowner occupiers and alternative investors at all income levels in both countries



The conclusion drawn from this comparison is that the greater horizontal inequity lies within the US acquisition tax system. The UK acquisition tax system has varying levels of horizontal inequity according to the levels of income and investment simulated herein. Firstly, the favouritism rests with the property investors who fall below the tax threshold. Secondly, the inequity at its greatest yields a 1.4% effective tax rate differential. Lastly, the differentials may be reduced when tax savvy alternative investors incur higher acquisition taxes with an aim to reduce or avoid capital gains taxation by periodically realising capital gains and reinvesting the proceeds.

5.1.2. Property taxes

Property taxation in the two countries of study has significant variations. Firstly and fundamentally, the UK property tax is the legal obligation of the occupant whereas the US property tax is the legal obligation of the owner. The significance of this variation depends on the assumptions made with respect to tax incidence of the US property tax assessed on rental properties. As discussed in the Literature Review (Chapter 2), there are three well-recognised views on property tax incidence: the “traditional view” stemming from the work done by Edgeworth (1897/1959), the “new view” which is attributed to Browne (1924) and the even more recent “benefit” or “user fee view” as articulated by Hamilton (1976). The underlying difference between the three views is where the property tax incidence effectively rests (i.e. how much is capitalised into the value of the property and/or asking rents). In accordance with the new view and the benefit view, and with regard for the user cost framework within which this research is set, full capitalisation of US property tax is assumed. This is consistent with the work done by Poterba (1989, 1991 and 2008), Haffner (2000), Thalmann (2005 and 2007) and Van den Noord (2001 and 2003).

The second significant variation between the two systems of taxation is that the UK assesses its property tax at the national level whereas the property tax in the US is assessed at the state and local level. The effect of this is a straightforward explanation and simulation of the UK property tax as opposed to the representative construct simulated for the US property taxes. The other variations and further discussion on the country specific tax systems is provided in Chapter 3 (Country Summaries).

United Kingdom

The UK property taxes assumed within the simulations are based on the historical rates, concessions and assessment criteria of a representative locale¹⁰¹. For the first three years of the study, the Community Charge (Poll Tax) was in effect, followed by the Council Tax. Both taxes are levied on the occupants of property, whether owner-occupied or tenants of rental properties. The taxes were/are set by local councils within national guidelines. The rates were/are then determined based on individual (sole criteria for the Poll tax) and property valuation (combined criteria determining the Council Tax). Given these characteristics of the taxes and the assumption that equivalent case families occupy equivalent homes, there can be no horizontal inequity between equivalent taxpayers, regardless of investment, ownership or mere occupation. The three types of investors studied would bear the same tax liabilities throughout the period studied in the UK.

United States

The US property taxes assumed within the simulations are based on the historical rates, concessions and assessment criteria of a representative state and locale¹⁰².

The property taxes *formally* incurred by individuals investing in a home for occupation or for rental purposes are the same with the exceptions of the first six years when the homeowner with the lowest income and investment (US-H½) realise a small reduction in liabilities (i.e. a total of \$589 in current monetary terms). Therefore, Table 5.5 recognises six occurrences of inequity favouring the homeowner occupier and 94 occurrences of equity with the tenant / landlord.

¹⁰¹ The reader is referred to Dorset County Council for a history of their Council tax charges since inception. Available at: <http://www.dorsetforyou.com/324966>.

¹⁰² The reader is referred to the State of Maryland's Homeowner's Property Tax Credit Program for the concession applied to the lowest tiered homeowners. Available at: <http://www.dat.state.md.us/sdatweb/htc.html>.

The individual investing alternatively and living in rented accommodations does not formally incur property taxes, as the *legal* taxpayer is the landlord. However, most or all of the cost of property taxes will be capitalised into the rental obligation, so the tenant will realise the *economic incidence* of property taxes.

A further inequity occurs with regard to the income tax treatment of the real estate taxes paid. While the homeowner and the landlord are allowed income tax deductions for the property taxes paid during the year, the tenant is not. The inequity of the deductibility is confined to the income tax analysis later in this chapter.

If the analysis of incidence is confined to the first round (formal) obligation, horizontal equity consistently exists between the homeowner and the tenant / landlord while horizontal inequity favouring the alternative investor is the constant. If, however, the academic interest is economic, then horizontal equity exists for the three types of investor at all levels of income for each year, with the aforementioned six exceptions.

Table 5.5 shows the results of the horizontal equity analysis on property taxation between homeowners and other investors (tenant/landlords and alternative investors) in each country for the entire period of study. With respect to the UK, all occurrences fall within the horizontal equity categories in both comparisons. With respect to the US results, the equity and inequity occurrences under both assumptions of tax incidence with regard to the homeowners and alternative investors are given.

Table 5.5 A summary of the equity frequencies of property taxes

Homeowners (H) vs. Other Investors (A and TL)				
Country	Investor	Horizontal Equity	Horizontal Inequity (Favouring the homeowner)	Horizontal Inequity (Favouring the other investor)
United Kingdom	UK-A	100	0	0
	UK-TL	100	0	0
United States	US-A (formal incidence)	0	0	100
	US-A (economical incidence)	94	6	0
	US-TL	94	6	0

Sources: Worksheets VI (Horizontal Analysis), AZ-BB136 and V-X136.

Conclusions, comparisons and contrasting results

Clearly tax incidence is a significant consideration when evaluating the horizontal equity of property taxation. A large inequity favouring the alternative investors would result if one ignores the shifting of the tax. The total additional property tax simulated under the US tax system at all five levels of income over the twenty-year period studied amounts to over \$314,000 in current monetary terms, given the assumed rates and assessment criteria. However, as the user cost framework underpins the research, it is appropriate to assume the full capitalisation of the property tax into the rental obligations, thereby ensuring horizontal equity between alternative investors, tenant / landlords and homeowner occupiers, with a minor

exception for the homeowner occupiers. The lowest tiered homeowner occupiers receive a small tax concession in the first six years simulated (total amount in current monetary terms of \$589). Barring that slight difference, complete horizontal equity effectively exists within the US property tax system.

Such horizontal equity naturally exists within the UK tax system given the fact that the property tax is borne by the occupant rather than the owner and there are no tax concessions for homeowner-investors. In conclusion, both countries tax systems are effectively horizontally equitable.

5.1.3. Income taxes

In evaluating the horizontal equity of the income taxation of homeowners in comparison with the alternative investors and the tenant / landlords in this study, the following issues are relevant:

Mortgage Interest (and US real estate taxes): The UK allowed mortgage interest relief on a limited amount of debt (e.g. £30,000) until 1999/2000. The relief was initially given at marginal income tax rates, but this was incrementally reduced in the years following 1990/91.¹⁰³ The US continues to allow mortgage interest relief as well as relief for the real estate taxes paid at marginal income tax rates for taxpayers choosing to itemize their deductions.¹⁰⁴

Rental income (and losses): Neither the UK nor the US tax the imputed rental income of the homeowner occupiers. Both countries tax net rental income at ordinary income tax rates. The UK does not allow net rental losses to offset other income whereas the US allows such relief under set conditions.¹⁰⁵

The results from the initial qualitative analysis of the simulated results are summarised in Table 5.6. This reflects the number of occurrences of horizontal equity, horizontal inequity favouring the homeowner occupiers and horizontal inequity favouring the other investors (e.g. alternative investors or tenant / landlords)

¹⁰³ The reader is referred to Section 3.1.1 of Chapter 3 (Country Summaries) for further details on the MIRAS rate restrictions.

¹⁰⁴ The reader is referred to Section 3.2.1 and Section 3.2.2 of Chapter 3 (Country Summaries) for details of the mortgage interest (and real estate tax) relief and the standard deduction, respectively.

¹⁰⁵ The reader is referred to Section 3.2.2 of Chapter 3 (Country Summaries) for a full discussion on the US passive activity loss rules of IRC Section 469.

with regard to income taxation during the twenty-year period in both countries. Explanations of these results are provided in the following country-specific sub-sections. The details of the aforementioned issues affecting the respective countries' income tax systems and the quantified results of the simulations are also discussed in the following sub-sections.

Table 5.6 A summary of the equity frequencies of income taxes

Homeowners (H) vs. Other Investors (A and TL)				
Country	Investor	Horizontal Equity	Horizontal Inequity (Favouring the homeowner)	Horizontal Inequity (Favouring the other investor)
United Kingdom	UK-A	50	50	0
	UK-TL	10	90	0
United States	US-A	30	70	0
	US-TL	0	74	26

Sources: Worksheets VI (Horizontal Analysis), BF-BH136 and AB-AD136

United Kingdom

Mortgage Interest Relief at Source (MIRAS) benefits the UK homeowner occupiers in the first half of the study. This results in the same horizontal inequities between the homeowners and their equivalent counterparts, the tenant/landlords and the alternative investors, from 1990/91 to 1999/00.

As the assumption of pure capital gains appreciating investments is made from the outset, the simulation does not recognise interest or dividend income for the alternative investors.¹⁰⁶ Therefore there is horizontal equity with regard to income

¹⁰⁶ The reader is referred to Section 4.5.2 of Chapter 4 (Methodology) for a discussion on this issue.

taxation between the UK homeowner occupants and the alternative investors from 1999/2000. Before that, MIRAS accounts for the horizontal inequities favouring the homeowner occupants at all levels of income and investment. Table 5.6 reflects this split between horizontal inequity favouring the homeowners in the first ten years due to MIRAS (e.g. 50 occurrences) and horizontal equity in the last ten years (e.g. 50 occurrences).

The cumulative income tax liabilities for the UK homeowner occupiers are compared with the cumulative income tax liabilities of the alternative investors and are summarised in Table 5.7. The absolute tax differences reflect the additional tax incurred by the alternative investors in both current and constant monetary terms. As with the acquisition taxes in the previous section, the tax liabilities for the alternative investors are subtracted from the tax liabilities of the corresponding homeowner occupants to quantify the horizontal inequities at each level of income and investment.

As shown in the table, the tax benefit from MIRAS increases as the assumed debt increases, but levels off at two times the median wage (UK-H2). The reason for this levelling off is attributed to the ceiling of £30,000 of eligible debt for relief. This ceiling is actually reached at one times the median income (UK-H1), but in the first year of the study (1990/91) marginal income tax rates are applicable for the relief and the differential variation between the median tiered families and the higher tiered families is due to the variations in marginal tax rates (i.e. UK-H1's relief is at 25%, whereas the other three higher earners are relieved at 40%).

Table 5.7 Differences in cumulative income tax obligations between UK homeowners and alternative investors in current and constant monetary terms

Income Multiples	Homeowner Occupiers	Alternative Investors	Differences (Current \$)	Differences (Constant \$)
	Pages 3-8	Pages 15-20	Pages 27-32	Pages 33-38
1/2	£8,885	£11,662	-£2,777	-£4,490
1	52,997	57,897	-4,900	-7,924
2	148,325	153,919	-5,594	-9,140
4	440,675	446,269	-5,594	-9,140
5	<u>586,850</u>	<u>592,444</u>	<u>-5,594</u>	<u>-9,140</u>
Cumulative	<u>£1,237,732</u>	<u>£1,262,191</u>	<u>-£24,459</u>	<u>-£39,834</u>

Appendix II (Summaries of Specific and Overall Taxes), various pages referenced.

Table 5.8 Proportional analysis of the differences in cumulative income tax obligations between UK homeowners and alternative investors where the respective homeowner obligations are set at 100%

Income Multiples	Homeowner Occupiers Respective Tax Obligations Set at 100%	Alternative Investors Percentages to Homeowners	Differences Percentages of respective difference to total difference
½	100%	131.3%	11.3%
1	100%	109.2%	20.0%
2	100%	103.8%	22.9%
4	100%	101.3%	22.9%
5	100%	101.0%	<u>22.9%</u>
			<u>100.0%</u>

Calculations are based on the data provided in Table 5.7

Table 5.8 depicts the differences in income taxation between the alternative investors and the homeowner occupiers at the five levels of income and investment, setting the obligations of the respective homeowner occupiers at 100%. This reflects the fact that the horizontal inequities are a decreasing function of the value of the tax discrimination involved. The lowest tiered alternative investor has a cumulative income tax obligation of 31.3% in excess of the homeowner occupier at the same level of income whereas the highest tiered alternative investor only experiences a 1% excess income tax obligation. In conclusion, the magnitude of horizontal inequity resulting from MIRAS is greatest at the lower levels of income and investment as reflected in Table 5.8. This is in spite of the fact that the actual monetary differences increase in proportion to the total cumulative difference of £24,459 (i.e. the difference quantified at half the median income is only 11.3% of the total as compared with 22.9% at the top three income and investment tiers). The reason for this is the limitations set on the level of qualified indebtedness for MIRAS and the caps set on applicable tax rates for the relief.

A further difference in the income tax treatment between the homeowner occupiers and the tenant/landlords is the fact that the homeowner occupier does not recognise imputed rental income whereas the landlord is taxed on net rental income. The landlord is able to offset rental income with the mortgage interest payments and other allowable expenses such as repairs and maintenance, utilities and agency fees. There is no provision for a depreciation allowance for unfurnished lettings in the UK property tax legislation.

In the simulation, rental income increases annually as a function of the appreciating house value. The mortgage interest decreases over the life of the loan given the assumption of a repayment mortgage and a tendency for declining interest rates during the twenty years of study. While maintenance increases as a function of the appreciating house value, the net effect is a decrease in allowable rental deductions over the study period. Rental losses are realised in the first three years of activity, followed by net rental income from 1993/94 onwards. The initial rental losses realised are ‘ring-fenced’ and limited to offsetting the future income on the properties. The suspended rental losses generated in the simulation are fully utilised by 2002/03 and rental income is finally recognised by the landlord taxpayers. The use of suspended losses delays the inevitable horizontal inequities favouring the homeowner occupants. From 2002/03 through the end of the study (2009/10), when income is finally recognised by the landlords, horizontal inequity is evident. There is a two-year period in between the allowance of MIRAS and recognition of rental income (2000/01 and 2001/02) when the UK homeowner occupiers and tenant / landlords are horizontal equal with respect to income taxation. This is depicted in Table 5.6 with 10 occurrences of horizontal equity (i.e. 5 levels of income and investment and 2 years). The remaining 90 occurrences are horizontal inequities favouring the homeowners due to the MIRAS effect in the first ten years and the recognition of rental income in the final eight years.

Table 5.9 reflects the total current and constant monetary differences in income tax obligations for the cumulative twenty-year period of the study for each level of income and investment. The total current tax difference of £64,259 is comprised of £24,459 attributed to MIRAS benefit realised by the homeowner occupiers and £39,800 attributed to the additional income tax on the realised net rental income of the tenant / landlord.

Table 5.9 Differences in cumulative income tax obligations between UK homeowners and tenant / landlords in current and constant monetary terms

Income Multiples	Homeowner Occupiers	Tenant Landlords	Differences (Current £)	Differences (Constant £)
	Pages 3-8	Pages 39-44	Pages 51-56	Pages 57-62
½	£8,885	£12,541	-£3,656	-£5,447
1	52,997	59,656	-6,659	-9,837
2	148,325	160,537	-12,212	-16,323
4	440,675	459,617	-18,942	-23,619
5	<u>586,850</u>	<u>609,640</u>	<u>-22,790</u>	<u>-27,764</u>
Cumulative	<u>£1,237,732</u>	<u>£1,301,991</u>	<u>-£64,259</u>	<u>-£82,990</u>

Appendix II (Summaries of Specific and Overall Taxes), various pages referenced.

Table 5.10 Proportional analysis of the differences in cumulative income tax obligations between UK homeowners and tenant / landlords where the respective homeowner obligations are set at 100%

Income Multiples	Homeowner Occupiers	Tenant Landlords	Differences
	Respective Tax Obligations Set at 100%	Percentages to Homeowners	Percentages of respective difference to total difference
½	100%	141.1%	5.7%
1	100%	112.6%	10.4%
2	100%	108.2%	19.0%
4	100%	104.3%	29.4%
5	100%	103.9%	<u>35.5%</u>
			<u>100.0%</u>

Calculations are based on the data provided in Table 5.9

Again, the magnitude of the horizontal inequity is greatest at the lowest level of income and investment and the inequity is a decreasing function of the value of the tax discrimination involved. The decreasing function observed as a result of MIRAS is accentuated by three factors concerning the rental income recognised in the last eight years of the study. First, the net income is taxed at graduated income tax rates. Income increased proportionally and taxed at a flat income tax rate would yield a proportional function of the value involve. Graduated rates applied to an increasing proportion of income results in a decreasing function. Second, half of the income is offset by the non-working spouse's personal allowance and third, any residual net income realised by the non-working spouse is taxed at the lower income tax rate. All three factors explain the observed decreasing function of the non-taxation of an imputed rental income by the homeowner occupiers. In conclusion, the horizontal inequities between the UK homeowner occupiers and the tenant / landlords are

greater in comparison with the alternative investors as a result of the taxable rental income of the tenant / landlords in the later years of the simulation.

With regard to the average tax rates, Table 5.11 below reflects the relationships of the *cumulative* income tax liabilities to the *cumulative* incomes for each type of investor at each level of income and investment.

Table 5.11 Summary of average UK income tax rates for all investors

Income Multiples	Homeowner Occupiers	Alternative Investors	Tenant / Landlords
	Pages 3-8	Pages 15-20	Pages 39-44
1/2	4.9%	6.4%	6.6%
1	14.5%	15.8%	15.6%
2	20.3%	21.1%	21.0%
4	30.1%	30.5%	30.1%
5	32.1%	32.4%	31.9%
Cumulative	27.1%	27.6%	27.3%

Appendix II (Summaries of Specific and Overall Taxes), various pages referenced.

The cumulative differences are relatively minor. The lower average tax rates of the homeowner occupiers as compared with the alternative investors are entirely due to MIRAS. The additional factor (net rental income) affecting the income taxation of the tenant / landlords resulted in a slightly higher average tax rate at the lowest tier (UK-TL½) as compared with the alternative investor, but slightly lower for the other levels of income and investment. The reason for this is due to the rental income split between tenant / landlord spouses and the effect of the non-working spouses' personal allowances and lower tax rates on half the extra income recognised. These elements have a diluting effect on the average tax rates calculated for the tenant / landlords. Taken as a whole, there is a 0.5% difference in cumulative average tax rates between the homeowner occupiers and the alternative investors and only a 0.2% difference between the homeowner occupiers and the tenant / landlords.

United States

The difference in the income tax treatment between the homeowner occupiers and the other investors is the fact that the former may be able to realise deductions at marginal income tax rates for the mortgage interest and the real estate taxes paid during the year. The realisation is dependent on the amount of all allowable deductions as compared with the statutory standard deduction available for all

taxpayers. There was a significant increase (21%) in the standard deduction in 2003 making it unnecessary for the majority of taxpayers to itemize their deductions. The main objective behind this enhancement was simplification for both the administration and compliance. As a result, if homeowners opt for the standard deduction they will not receive any tax relief for their mortgage interest expense. Since 2008 however, any real estate taxes paid up to a maximum limit of \$1,000 will be allowed in addition to the standard deduction.

In the simulation the homeowner occupant at the lowest level of income and investment (US-H½) is unable to realise any income tax benefit from debt financing, as their itemized deductions never exceed the standard deduction. The homeowner occupant at the median level of income (US-H1) realises a very small tax benefit from itemizing deductions until 1996 when they no longer benefit at all as their itemized deductions fall below the standard deductions thereafter. The tax benefits realised for the first six years for this case family are relatively insignificant as they totalled only \$581.

The true beneficiaries of the mortgage interest and real estate tax deductions are the taxpayers with higher levels of income and investment (US-H2, US-H4 and US-H5) because their itemized their deductions exceed the standard deduction by relatively significant amounts. Throughout the period of study, these taxpayers significantly reduce their income tax obligations by way of these provisions.

Table 5.6 summarises the results from analysing horizontal equity on a qualitative basis. With the exception of the last two years of the study, there is complete horizontal equity between the lowest tiered homeowners and alternative investors (US-H½ and US-A½), as the homeowners do not itemize their deductions (i.e. the standard deductions are more beneficial). In 2008 and 2009 homeowners who do not itemize deductions are able to increase their standard deductions by the lesser of the real estate taxes paid or \$1,000. This introduces an inequity between the lowest-tiered homeowners and alternative investors. The median income earning and investing homeowners (US-H1) benefits from itemizing their deductions in the first six years of the study, and use the standard deductions thereafter. Therefore there are 18 years of horizontal equity for the lowest tiered investors and 12 years for the median income investors. The remaining results for the higher tiers are inequities

consistently favouring the homeowner occupiers (60 occurrences), the differences being entirely attributable to the homeowners itemizing deductions.

Table 5.12 reflects total monetary differences between the homeowner occupiers and the alternative investors for the twenty-year period studied for each level of income and investment in current and constant dollars. The negative differences reflect the total tax subsidies the homeowner occupiers realise from the deductibility of mortgage interest and/or real estate tax payments. Evident in this simple comparison is the fact that the largest subsidies are realised by those with the largest incomes.

Table 5.12 Differences in cumulative income tax obligations between US homeowners and alternative investors in current and constant monetary terms

Income Multiples	Homeowner Occupiers <small>Pages 63-68</small>	Alternative Investor <small>Pages 75-80</small>	Differences (Current \$) <small>Pages 87-92</small>	Differences (Constant \$) <small>Pages 93-98</small>
½	\$2,386	\$2,481	-\$95	-\$97
1	56,391	57,272	-881	-£1,284
2	184,031	211,521	-27,490	-39,802
4	562,191	670,813	-108,622	-148,155
5	<u>778,056</u>	<u>939,946</u>	<u>-161,890</u>	<u>-217,290</u>
Cumulative	<u>\$1,583,055</u>	<u>\$1,882,033</u>	<u>-\$298,978</u>	<u>-\$406,628</u>

Appendix II (Summaries of Specific and Overall Taxes), various pages referenced.

Table 5.13 Proportional analysis of the differences in cumulative income tax obligations between US homeowners and alternative investors where the respective homeowner obligations are set at 100%

Income Multiples	Homeowner Occupiers <small>Respective Tax Obligations Set at 100%</small>	Alternative Investors <small>Percentages to Homeowners</small>	Differences <small>Percentages of respective difference to total difference</small>
½	100%	104.0%	0.0%
1	100%	101.6%	0.3%
2	100%	114.9%	9.2%
4	100%	119.3%	36.3%
5	100%	120.8%	<u>54.2%</u>
			<u>100.0%</u>

Calculations are based on the data provided in Table 5.12

Table 5.13 depicts the differences in income taxation between the alternative investors and the homeowner occupiers at the five levels of income and investment, setting the obligations of the respective homeowner occupiers at 100%. This reflects the fact that the horizontal inequities are an increasing function of the value of the tax discrimination involved. The lowest tiered alternative investor has a cumulative income tax obligation of 4.0% in excess of the homeowner occupier at the same level of income whereas the highest tiered alternative investor experiences a 20.8% excess income tax obligation. In conclusion, the magnitude of horizontal inequity resulting from mortgage interest and real estate tax relief is greatest at the highest levels of income and investment as reflected in Table 5.13. The reason for this is the fact that the lower tiered case families hardly benefitted from itemizing deductions as explained earlier, and the tax benefit realised by the higher tiered case families was not limited in terms of indebtedness or income tax rates. Also reflected in this table is the fact that the actual monetary differences increase in proportion to the total cumulative difference of \$298,978 (i.e. the difference quantified at five-times the median income accounts for 54.2% of the total).

The US tenant / landlord is able to offset rental income with the mortgage interest payments and real estate taxes in addition to other allowable expenses such as repairs and maintenance, utilities and agency fees. In addition to these expenditures there is a provision for an accelerated depreciation. While the homeowner occupant may or may not benefit from itemizing their deductions, the tenant/landlord claims the standard deduction and, commonly, a net rental loss.

In the simulation, rental income increases at a constant rate (3%) annually. The mortgage interest deduction decreases while the property taxes and maintenance increase and the accelerated depreciation largely remains constant. The net effect is a decrease in allowable rental deductions over the period of study with the net rental losses turning into net rental income from 2003 onwards at all levels of investment. The realisation of rental losses is limited to the lower levels of income and investment (US-TL½, US-TL1, US-TL2) due to the restrictions imposed by IRC Section 469¹⁰⁷. With regard to US-TL4 and with the exception of the first three years of study, their respective net losses are partially or wholly disallowed until

¹⁰⁷ The reader is referred to Section 3.2.2 of Chapter 3 (Country Summaries) for a complete explanation of the passive activity loss rules under IRC Section 469.

2003 and onwards when they are allowed to offset subsequent net rental income with the suspended losses. With regard to US-TL5, all rental losses are suspended and carried forward and utilised from 2003 onwards, offsetting subsequent net rental income. The result from these restrictions and provisions is horizontal inequity favouring the tenant / landlord from 1990 through 2002, and then horizontal inequity favouring the homeowner occupant from 2003 onwards with respect to the two lower levels of income and investment (US-½ and US-1). The horizontal inequity favoured the homeowner occupant throughout the period of study for the higher three levels of income and investment (US-2, US-4, and US-5) as a result of the itemized deductions allowed the homeowner occupiers and, in the cases of the higher tiered tenant / landlords, the restrictions on rental loss recognition. These results, 74 occurrences of inequity favouring the homeowner occupiers and 26 occurrences of inequity favouring the tenant / landlords are depicted in Table 5.6.

In summary, the differences between homeowner occupiers and the tenant / landlords, as reflected in Table 5.14 by income multiples, are the culmination of a number of factors including: (a) the homeowner occupiers itemizing their deductions at the higher levels (US-TL2, US-TL-4 and US-TL5); (b) the tenant/landlords realising net rental losses in the early years (1990-2002) and income in the later years (2003-2009) at the lower levels of income and investment (US-TL½ and US-TL1); and (c) the restriction of passive losses for the higher tiers (US-TL-4 and US-TL5). Interestingly, there is relatively little difference between the two cumulative comparisons of homeowner occupiers and alternative investors and homeowner occupiers and tenant / landlords (approximately \$30,000), yet the distribution of the subsidies varies significantly.

Table 5.14 Differences in cumulative income tax obligations between US homeowners and tenant / landlords in current and constant monetary terms

Income Multiples	Homeowner Occupiers <small>Pages 63-68</small>	Tenant Landlords <small>Pages 99-104</small>	Differences (Current \$) <small>Pages 111-116</small>	Differences (Constant \$) <small>Pages 117-122</small>
1/2	\$2,386	\$1,455	\$931	1,676
1	56,391	54,857	1,534	3,077
2	184,031	203,202	-19,171	-24,200
4	562,191	649,097	-86,906	-114,233
5	<u>778,056</u>	<u>928,739</u>	<u>-150,683</u>	<u>-206,969</u>
Cumulative	<u>\$1,583,055</u>	<u>\$1,837,350</u>	<u>-\$254,295</u>	<u>-\$340,649</u>

The homeowner occupiers incur greater income tax obligations at the two lower tiers of income and investment as a result of the not being able to exceed the standard deduction and the fact that the tenant / landlords are able to offset general income with rental losses while claiming the standard deduction. The horizontal inequity is greatest at the lowest level of income and investment with a 39% variation in favour of the tenant / landlord as reflected in Table 5.15. Once the homeowner occupiers are able to itemize their deductions (i.e. at the three highest tiers: US-H2, US-H4 and US-H5), the inequities favour the homeowner occupiers and are an increasing function of the value involved. Again, the greatest proportion of the cumulative income tax difference is attributed to the highest tiered investor as reflected in Table 5.15.

Table 5.15 Proportional analysis of the differences in cumulative income tax obligations between US homeowners and tenant / landlords where the respective homeowner obligations are set at 100%

Income Multiples	Homeowner Occupiers Respective Tax Obligations Set at 100%	Tenant Landlords Percentages to Homeowners	Differences Percentages of respective difference to total difference
½	100%	61.0%	-0.4%
1	100%	97.3%	-0.6%
2	100%	110.4%	7.5%
4	100%	115.5%	34.2%
5	100%	119.4%	<u>59.3%</u>
			<u>100.0%</u>

Calculations are based on the data provided in Table 5.14

With regard to the average tax rates, Table 5.16 reflects the relationships of the cumulative income tax liabilities to the cumulative incomes for each type of investor at each level of income and investment. With the exception of the lowest two levels income and investment where the tenant / landlord is favoured because of their recognition of rental losses in the early years, the homeowner occupiers have significantly lower average income tax rates to the other two types of investors.

Table 5.16 Summary of average US income tax rates for all investors

Income Multiples	Homeowner Occupiers	Alternative Investors	Tenant / Landlords
	Pages 63-68	Pages 75-80	Pages 99-104
1/2	0.6%	0.6%	0.4%
1	7.0%	7.1%	6.9%
2	11.4%	13.1%	12.9%
4	17.4%	20.8%	20.5%
5	19.3%	23.3%	23.5%
Cumulative	15.7%	18.7%	18.6%

[Appendix II \(Summaries of Specific and Overall Taxes\)](#), various pages referenced.

Conclusions, comparisons and contrasting results

Based on the simulation of the twenty-year period, there are horizontal inequities between the homeowner occupiers and the other investors (both alternative investors and tenant / landlords) at all five income tiers, in both countries. While the focus of this chapter is on the horizontal inequities, it is interesting to note the significant distributional variation of the inequities. When compared with the alternative investors, the lower tiered US homeowners (US-H^{1/2} and US-H1) have relatively insignificant tax advantages. This is due to their inability to claim itemized deductions in excess of the standard deduction. The US income tax advantage of homeownership clearly rests with the higher tiered case families (US-H2, US-H4 and US-H5) who are able to itemize deductions. The UK income tax advantage from MIRAS is far less significant overall in comparison with the US tax system, and certainly more even in its distribution. Table 5.17 summarises the horizontal inequities quantified earlier in Tables 5.7 and 5.12 and makes a monetary comparison of the two countries' results by assuming a common currency. The US dollars are translated to UK pounds with a £1 = \$1.60 exchange rate.

Table 5.17 A comparison of the income tax differentials between homeowner occupiers and alternative investors in absolute monetary terms using a common currency (UK£)

Income Levels	US Income Tax Differentials (US\$) ¹⁰⁸	US Income Tax Differentials (UK£)	UK Income Tax Differentials (UK£) ¹⁰⁹	Differences between US and UK (UK£)
½	-\$95	-£59	-£2,777	£2,718
1	-881	-552	-4,900	4,348
2	-27,490	-17,181	-5,594	-11,587
4	-108,622	-67,889	-5,594	-62,295
5	-161,890	-101,181	-5,594	-95,587
Cumulative	<u>-\$298,978</u>	<u>-£186,862</u>	<u>-£24,459</u>	<u>-£162,403</u>

As reflected in the differences between the two countries' absolute income tax differentials, mortgage relief at the lower tiers significantly advantage the UK homeowner occupiers over the US homeowner occupiers. This trend is reversed at the higher tiers when the US homeowner occupiers truly benefit in their income tax system. This is largely attributed to the restricted rate relief in the UK as opposed to marginal tax relief in the US. Another factor that must not be overlooked is that the relief in the UK ceased in 1999/2000. The above results are reflective of 10 years' UK relief as opposed to 20 years' US relief.

Neither the US nor the UK taxes an imputed rental income for homeowner occupiers but both countries tax the net rental income realised by investors in residential real estate. Significant variations exist within each country's legislation with regard to the recognition of net rental losses. The US income tax system will allow rental losses from activities in which the taxpayers actively participate to offset ordinary income. The losses are limited and the allowance is phased out once modified adjusted gross income exceeds \$100,000.¹¹⁰ In contrast, the UK does not allow net rental losses to offset ordinary income under any circumstance. The losses are ring fenced and available against future net rental income derived from the same rental property.

¹⁰⁸ The reader is referred back to Table 5.12 for this detail.

¹⁰⁹ The reader is referred back to Table 5.7 for this detail.

¹¹⁰ The reader is referred to Section 3.2.2 of Chapter 3 (Country Summaries) for a discussion on IRC Section 469, Passive Activity Loss Rules.

Another contributing variation between US and UK tenant / landlords is due to the allowance of an accelerated depreciation expense in the US income tax system, with no such provision in the UK income tax system. The simulated losses in the early years are therefore greater in the US as opposed to the UK. In fact, losses are realised in the first thirteen years of the US simulation whereas the UK case families only have three years of losses.

The lower tiered US tenant / landlords (US-TL½ and US-TL1) are able to reduce their tax liabilities below those of their equivalent homeowner occupiers as a result of early year loss recognition and the inability of the homeowner occupiers to itemize their deductions. This is reflected in Table 5.14 with positive absolute tax differences depicted in the last two columns. The higher tiered tenant / landlords are unable to compete with the itemized deduction advantage of the homeowner occupiers. The UK tenant / landlords are able to stave off rental income recognition until 2002/03 with the use of unutilised rental losses incurred in the first three years of the simulation. From that point onward, the tax liabilities of the tenant / landlords exceed those of their equivalent homeowner occupiers as a result of the net rental income. The reader is reminded that MIRAS is also a factor in determining the net tax variations between these two investors. Table 5.18 summarises the horizontal inequities quantified earlier in Tables 5.9 and 5.14 and makes a monetary comparison of the two countries' results by assuming a common currency. The US dollars are translated to UK pounds with a £1 = \$1.60 exchange rate.

Table 5.18 A comparison of the IT differentials between homeowners and tenant/landlords in absolute monetary terms (common currency (UK£))

Income Levels	United States Income Tax Differentials (US\$) ¹¹¹	United States Income Tax Differentials (UK£)	United Kingdom Income Tax Differentials (UK£) ¹¹²	Differences between US and UK (UK£)
½	\$931	£582	-£3,656	£4,238
1	1,534	959	-6,659	7,618
2	-19,171	-11,982	-12,212	230
4	-86,906	-54,317	-18,942	-35,375
5	-150,683	-94,177	-22,790	-71,387
Cumulative	<u>-\$254,295</u>	<u>-£158,935</u>	<u>-£64,259</u>	<u>-£94,676</u>

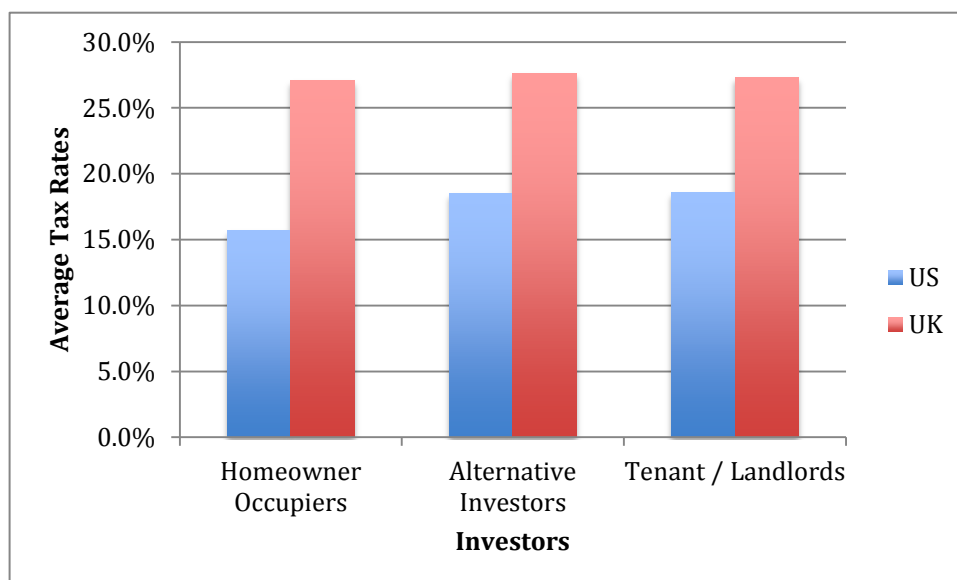
¹¹¹ The reader is referred back to Table 5.14 for this detail.

¹¹² The reader is referred back to Table 5.9 for this detail.

As reflected in the difference between the two countries' absolute income tax differentials, the homeowner occupiers' income tax advantage is greater in the UK with regard for the first three levels of income and investment (UK-H¹/₂ UK-H1 and UK-H2). This trend is reversed at the higher tiers when the US homeowner occupiers truly benefit in their income tax system with reference to the available itemized deduction provision.

Figure 5.4 compares the average income tax rates as determined by the cumulative income and simulated tax results for all five levels of income, all three types of investor in both countries.

Figure 5.4 A comparison of the average cumulative income tax rates of the three investors in both countries



Appendix I (Chapter 5 Figures), page 1

Besides the obvious differences in average tax rates between the two counties (the UK yielding averages over 25% and the US under 20%), an interesting observation is the relatively small variation between the three investors in the UK whereas the US homeowner occupiers are notably advantaged in their income tax system in comparison with the other US two investors.

5.1.4. Capital gains taxes

The capital gains realised in the simulations by the homeowner occupiers are exempt from both the UK and the US capital gains tax (CGT) systems. The qualified principal residence is provisionally exempt from CGT in the UK and the US has a generous exemption allowance which effectively exempts the five US case families.

The capital gains tax systems in both countries tax nominal capital gains at reduced tax rates. The other investors (e.g. the alternative investors and the tenant / landlords) in both countries are subject to such taxation. The UK has a generous personal exemption to offset taxable capital gains. Rather than administering an exemption for all, the US applies a threshold of taxation. Greater detail of each country's capital gains tax systems as well and the quantified results from the simulations are provided in the following sub sections.

Table 5.19 shows the results of the horizontal equity analysis on capital gains taxation between homeowners and other investors (tenant / landlords and alternative investors) in each country for the entire period of study.

Table 5.19 A summary of the equity frequencies of capital gains taxes

Homeowners (H) vs. Other Investors (A and TL)				
Country	Investor	Horizontal Equity	Horizontal Inequity (Favouring the homeowner)	Horizontal Inequity (Favouring the other investor)
United Kingdom	UK-A	5	0	0
	UK-TL	1	4	0
United States	US-A	2	3	0
	US-TL	0	5	0

The occurrences of the equities and inequities depicted above will be fully explained in the following country-specific sub sections.

United Kingdom

The gains realised by the homeowner occupiers and the tenant / landlords are economically the same but the tax treatment with regard to capital gains is very different. UK homeowners are exempt from capital gains taxation on the sale of their principal residence when certain occupation criteria are met.¹¹³ No such exclusion is available for owners of the rental properties. Property income is considered *unearned income* and therefore the capital gains tax reliefs (i.e. rollover relief) are not available. Nor will lettings relief apply in this scenario as the property is not the main home. Therefore the gains on sale of rental properties are fully taxable at 18 per cent, net of the annual exemption (exemptions for shared properties) of £10,100 applicable in 2009/10.

The gains realised by the alternative investors are taxable but entirely avoidable through tax planning. Basic provisions within the capital gains tax legislation significantly reduce and may even eliminate the recognition of any liabilities. Firstly, each spouse is entitled to his/her own annual exemption. Secondly, jointly held assets are regarded as being equally owned by both spouses (i.e. each having a 50 per cent share) with the corresponding capital gains tax liabilities being shared equally. Thirdly, TCGA 1992 s 58 allows for the disposal of an asset from one spouse to the other without gain or loss recognition. A well-recognised tax planning technique is to transfer assets to a 'poorer' spouse to ensure both personal allowances and annual exemptions are used. Savvy taxpayers utilise the shared spousal recognition and dual annual exemptions to reduce or eliminate their capital gain tax exposure.

Bed and breakfasting is the term used to describe the selling of shares on one day and the repurchase of those same shares the next day. This allowed investors to crystallise their capital gains and hold the same shares with a step up in basis. It was

¹¹³ The reader is referred to Section 3.1.1 of Chapter 3 (Country Summaries) for a full discussion on the principal residence exemption from capital gains taxation.

a common tax avoidance scheme recognised and then disallowed for any transactions on or after 17 March 1998. Since then, any shares of the same class in the same company sold and repurchased within 30 days are matched. This prevents the shares sold from being identified with the shares already held. However, the rules may be circumvented by repurchasing the stock through a trust in which the taxpayer is the beneficiary or by the spouse.

The technique used in the simulation of selling and immediately reinvesting again is used in clear conscience as specific shares have not been identified and therefore the anti-avoidance legislation is not breached. It is assumed that, where a periodic sale is necessary, the repurchased stock is not the same class and company, but simply of an equal growth potential (i.e. 3 per cent annually). As the levels of income and investment increased in the simulation, periodic sales followed by reinvestments during the period of study are necessary for the top three income earners/investors (UK-A2, UK-A4 and UK-A5) as well as the split recognition between the married couples in all but the lowest income earner/investor (UK-A¹/₂). The result is that all five levels of alternative investors are able to completely avoid capital gains taxation. To illustrate this conclusion Table 5.20 lays out the capital gains transactions for the median wage earner (UK-A1) and Table 5.21 lays out the capital gains transactions for the taxpayer with the highest level of income and investment (UK-A5).

Table 5.20 Capital gains tax calculation (UK-A1)

Final Sale 2009/10	Total assets (jointly held)	Spouse 1 (50%)	Spouse 2 (50%)
Proceeds	£35,712	£17,856	£17,856
Acquisition costs (various)	<u>22,722</u>	<u>11,361</u>	<u>11,361</u>
Capital gain	12,990	6,495	6,495
Annual exemption		<u>10,100</u>	<u>10,100</u>
Taxable capital gain		<u>None</u>	<u>None</u>

Table 5.21 Capital gains tax calculations (UK-A5)

Initial Sale in 2005/06	Total assets (jointly held)	Spouse 1 (50%)	Spouse 2 (50 %)
Proceeds	£151,197	£75,598	£75,599
Acquisition costs (various)	103,611	51,805	51,806
Indexation Allowances	<u>19,836</u>	<u>9,918</u>	<u>9,918</u>
Indexed capital gain (before taper relief)	27,750	13,875	13,875
Tapered Capital Gain	16,650	8,325	8,325
Annual exemption		<u>8,500</u>	<u>8,500</u>
Taxable capital gain		<u>None</u>	<u>None</u>
Final Sale 2009/10	Total assets (jointly held)	Spouse 1 (50%)	Spouse 2 (50%)
Proceeds	£180,633	£90,316	£90,317
Reinvested Equity	151,197	75,598	75,599
Acquisition costs (various)	<u>10,000</u>	<u>5,000</u>	<u>5,000</u>
Capital gain	19,436	9,718	9,718
Annual exemption		<u>10,100</u>	<u>10,100</u>
Taxable capital gain		<u>None</u>	<u>None</u>

It is appropriate to note here that this tax saving comes at price. The reinvestment triggers additional acquisition taxation. The net effect of the capital gains tax savings and the additional acquisition tax incurrence's are summarised in Table 5.22 for the affected case families in current and constant monetary terms. The real tax savings from this form of planning is obviously realised at the highest tiers (UK-A4 and UK-A5).

Table 5.22 The UK tax savings from early dispositions and subsequent reinvestments for alternative investors

Income Multiple	Additional Acquisition taxes on reinvestments	Capital Gains Taxes avoided on early disposal	Tax Savings: Differences (Current £)	Tax Savings: Differences (Constant £)
1/2	0	0	0	0
1	0	0	0	0
2	221	633	412	337
4	605	6,007	5,402	5,347
5	<u>756</u>	<u>8,428</u>	<u>7,672</u>	<u>7,602</u>
Cumulative	<u>£1,582</u>	<u>£15,068</u>	<u>£13,486</u>	<u>£13,286</u>

Source: Worksheet V (Overall Tax (Absolute \$)), I191:M199.

In conclusion with respect to the UK capital gains tax system, horizontal equity exists between the homeowner occupiers and the alternative investors at every level of income and investment somewhat surprisingly, as neither realise a capital gains tax liability in the simulation. These results are depicted in Table 5.19. An obvious horizontal inequity between the homeowner occupiers and tenant / landlords favouring the homeowner occupiers exists at almost every level of investment. Given the generous annual exemption in 2009 available to both taxpayers, the lowest tiered tenant / landlord (UK-TL $\frac{1}{2}$) is able to avoid capital gains taxation. Therefore, there are four occurrences of inequities favouring the homeowner occupiers and one occurrence of horizontal equity between the homeowners and tenant / landlords.

There are however, significant differences in the economic gains realised by the property investors and alternative (financial) investors that must be acknowledged. Whereas the initial equity invested is identical and subsequent equity investments are matched in the simulations, the asset values on which the appreciation is realised differs. The homeowners and tenant / landlords realise an appreciation on the full house values throughout the study while the alternative investors realise appreciation on their initial and subsequent capital investments made throughout the study period. The significant difference in appreciable bases is the mortgage financing available for the two property investors. In summary, there is a significant difference in realised capital gains (cumulatively, over £260,000). Table 5.23 below summarises the capital gains, tax liabilities and average tax rates for the different case families.

Table 5.23 Summary of capital gains, taxes and average tax rates for all three UK investors

	Homeowner occupier			Tenant / landlord			Alternative investor		
Income Multiple	Capital Gain	Tax 3-8	ATR	Capital Gain	Tax 39-44	ATR	Capital Gain	Tax 15-20	AT R
UK-½	£17,130	£0	0%	£17,130	£0	0.0%	£6,415	£0	0%
UK-1	34,260	0	0%	34,260	1,682	4.9%	12,990	0	0%
UK-2	68,519	0	0%	68,519	8,166	11.9%	26,671	0	0%
UK-4	137,039	0	0%	137,039	21,031	15.3%	53,571	0	0%
UK-5	171,299	0	0%	171,299	27,198	15.9%	67,022	0	0%
Cum	£428,247	£0	0%	£428,247	£58,077	13.6%	£166,669	£0	0%

Appendix II (Summaries of Specific and Overall Taxes), various pages referenced.

United States

US homeowners are permitted a generous exemption (i.e. \$500,000 for married filing jointly taxpayers) when certain occupation criteria are met. In this study all five families are able to fully exclude from taxation their respective capital gains realised on disposition.

No such exclusion is available for owners of rental properties with the exception of the like-kind exchange provisions not addressed here. The gains on sale of rental properties are fully taxable under the capital gains tax regime. Any unutilised rental losses carried forward and unutilised in the year of disposition are allowed under the income tax regime. Further, the gains must reflect the depreciation claimed while a rental activity. In summary, there exist horizontal inequities favouring the homeowner occupiers when comparisons are made with the tenant / landlords at every level of income and investment. The five occurrences of inequities are reflected in Table 5.19.

Similarly, the gains realised by the alternative investor are fully taxable once the threshold is surpassed. Therefore, horizontal inequities exist between the homeowner occupiers and the alternative investors, favouring the homeowner occupiers at the higher levels of income and investment (US-H2, US-H4 and US-H5). There are two occurrences of horizontal equity at the two lower tiers; given their respective levels of taxable income they do not surpass the taxable threshold and therefore are not

assessed capital gains taxes. Table 5.19 reflects the three occurrences of inequities favouring the homeowner occupiers and the two occurrences of horizontal equity with respect to the comparisons between homeowner occupiers and tenant / landlords.

Once again, there are significant differences in the economic gains realised by all three investors that warrants further discussion. Both the homeowner occupiers and tenant / landlords realise the same appreciable gain of \$944,662. However, in addition to this gain the tenant / landlords are required to adjust the capital basis of their investments by the amount of depreciation claimed while the properties are held out for rent. An additional \$678,975 of taxable gain is thereby realised by the tenant / landlords. The capital gains tax reported for the tenant / landlords reflect the capital gains tax (15%) on investment appreciation and as well as the taxation of the depreciation recaptured (25%). With regard to the significantly lower gains realised by alternative investors, there is a cumulative difference in realised gains of over \$618,000 as a result of the frontloaded property investment. Table 5.24 summarises the relevant information for the different case families.

Table 5.24 Summary of capital gains, taxes and average tax rates for all three US investors

Income Multiple	Homeowner occupier			Tenant/Landlord			Alternative Investor		
	Capital Gain	Tax p 63-68	ATR	Capital Gain	Tax p 99 - 104	ATR	Capital Gain	Tax p 75 - 80	ATR
US-½	\$37,786	\$0	0.0%	\$64,946	\$3,164	4.9%	\$13,054	\$0	0.0%
US-1	75,573	0	0.0%	129,890	17,515	13.5%	26,107	0	0.0%
US-2	151,146	0	0.0%	259,782	49,832	19.2%	52,214	7,832	15.0%
US-4	302,292	0	0.0%	519,564	99,662	19.2%	104,429	15,665	15.0%
US-5	377,865	0	0.0%	649,455	124,577	19.2%	130,536	19,580	15.0%
Cum	\$944,662	\$0	0.0%	\$1,623,637	\$294,750	18.2%	\$326,340	\$43,077	13.2%

Appendix II (Summaries of Specific and Overall Taxes), various pages referenced.

Conclusions, comparisons and contrasting results

An important consideration when comparing and contrasting the capital gains tax situations of different investors are the significant differences in realised gains between alternative investors and property investors (homeowner occupants and

tenant / landlords). The appreciation for property investors is based on the full property value (including the portion financed by debt). While the simulations considered equal equity investments for the three types of investors, those invested in property reap the benefit of an appreciating base five times the value of their equivalent alternative investors who invested in financial securities. This is a fundamental difference between investors, regardless of a country's tax system.

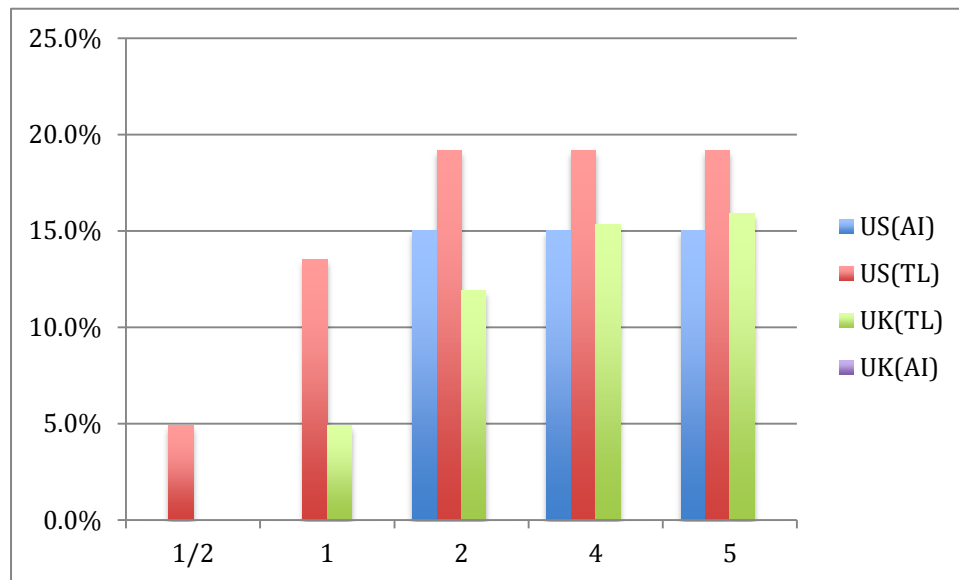
The US allows an accelerated depreciation deduction from the rental income, thus reducing the income tax obligations of those actively participating in a rental activity. The cumulative depreciation is taxed at ordinary income tax rates up to a maximum rate of 25% when the rental activity is sold. This is a significant variation between the two countries' capital gains tax systems, given the fact that the UK does not allow for such a deduction in the first place. Therefore, the realised gains of the tenant / landlords will far exceed those of the homeowners in the US, whereas, in the UK the gains will be the same between these two investors.

The homeowner occupiers are exempt from capital gains taxation in both the US and the UK. The exemption in the US is the result of the generous threshold in the current legislation for such investments. The UK has always excluded the primary residence from capital gains taxation.

The UK alternative investors escape capital gains taxation at all levels of income and investment through careful and somewhat aggressive tax planning. The two lowest tiered US alternative investors (US-A½ and UK-A1) are able to avoid capital gains taxation by falling under the taxable threshold. The higher tiered US alternative investors incur significant liabilities.

Figure 5.5 reflects the average tax rates of the other investors (alternative investors and tenant / landlords) at each level of income and investment in both the UK and the US. The homeowners are not depicted in the Figure as they are exempt at every level of income in both countries and like the UK alternative investor, they would not appear in the chart except within the legend.

Figure 5.5 A comparison of the average capital gains tax rates for the other investors in both countries studied



Appendix I (Chapter 5 Figures), page 2

The US tenant / landlords incur the greatest rate of tax, on average at every level. The UK tenant / landlords incur a slightly greater average tax rate when compared with the US alternative investors at the two highest levels of income and investment (UK-TL4 and UK-TL5).

5.1.5. Overall tax obligation

The overall tax obligations are the sums of each specific tax obligations for each taxpayer, each year. As with the analyses of the specific tax obligations, comparisons are made between the homeowner occupiers and the other investors at each level of income and investment (paired analysis), between the two sets of pairs within each country (within-country analysis), and between the corresponding pairs in the other country studied (cross-country analysis). The analysis is first qualitative, identifying the occurrences of horizontal equity, inequity favouring the homeowner occupiers and inequity favouring the other investors (alternative investors or tenant / landlords). Then the analysis quantifies the inequities in terms of absolute (monetary) differences. The average tax rates for the cumulative overall tax obligations are based on comprehensive income denominators.

Table 5.25 A summary of the equity frequencies of overall tax obligations

Homeowners (H) vs. Other Investors (A and TL)				
Country	Investor	Horizontal Equity	Horizontal Inequity (Favouring the homeowner)	Horizontal Inequity (Favouring the other investor)
United Kingdom	UK-A	0	100	0
	UK-TL	10	90	0
United States	US-A	24	74	2
	US-TL	0	75	25

Source: Worksheet VI (Horizontal Analysis), BL-N136

United Kingdom

In summary of the horizontal equities and inequities detected in the specific tax obligations with respect to the UK homeowners and alternative investors, the following observations are made:

- There are four instances of inequity favouring the alternative investors (in the initial year) with regard to acquisition taxes with the remaining possibilities (96) indicating inequities favouring the homeowner occupiers.
- There is complete horizontal equity with regard to property taxes.
- There is horizontal equity in the last ten years with regard to income taxes (the first ten years favoured the homeowner occupants due to MIRAS).
- There is complete horizontal equity with regard capital gains taxes.

The overall tax obligations however entirely point to inequities favouring the homeowners. The variations in overall tax obligations versus specific tax obligations between homeowner occupiers and alternative investors is the occurrence and levels of acquisition taxes coupled with the mortgage relief realised by the homeowners during the overlapping period (1990/91 – 1999/2000). Even though there is a greater acquisition tax obligation imposed on four of the homeowner occupiers in the initial year (1990/1991), this is more than offset by the reduced income tax obligations resulting from MIRAS thus favouring the homeowner occupants *overall* as depicted in Table 5.25.

The differences in overall tax obligations between homeowners and alternative investors are attributed to acquisitions taxes (a cumulative difference in favour of the alternative investors of £2,099¹¹⁴) and the MIRAS benefit (a cumulative difference in favour of the homeowners of £24,459¹¹⁵). The cumulative net difference of £22,360 is how much less tax, overall, the homeowner occupiers paid over the twenty-year period. The results are summarised by income multiples in Table 5.26, depicting differences in current and constant monetary terms.

Table 5.26 Differences in cumulative overall tax obligations between UK homeowners and alternative investors

Income Multiples	Homeowner Occupiers <small>Pages 3-8</small>	Alternative Investors <small>Pages 15-20</small>	Differences (Current £) <small>Pages 27-32</small>	Differences (Constant £) <small>Pages 33-38</small>
½	£18,359	£21,193	-£2,834	-£4,578
1	64,326	68,915	-4,589	-7,355
2	162,938	168,130	-5,192	-8,302
4	464,712	469,664	-4,952	-7,533
5	<u>611,312</u>	<u>616,105</u>	<u>-4,793</u>	<u>-7,132</u>
Cumulative	<u>£1,321,647</u>	<u>£1,344,007</u>	<u>-£22,360</u>	<u>-£34,900</u>

Appendix II (Summaries of Specific and Overall Taxes), various pages referenced.

The column depicting the differences between the homeowners and alternative investors in Table 5.26 may need some clarification. The differences increase until the move from UK-2 to UK-4 when they fall and fall again moving up to UK-5. This is due to equal income tax variation due to MIRAS with increasing differences in acquisition taxes for the homeowner occupiers. The reader is reminded of the cap

¹¹⁴ This cumulative difference is detailed in Table 5.2.

¹¹⁵ This cumulative difference is detailed in Table 5.7.

imposed on debt available for MIRAS amounting to £30,000. The income tax savings attributable to MIRAS for the top three income earners/investors is equal at £5,594 cumulatively. The acquisition tax obligations rise proportionally to income. The net effect is a drop in the overall tax differences between homeowner occupiers and alternative investors.

To summarise the horizontal equities and inequities detected in the specific tax obligations with respect to the UK homeowners and tenant / landlords, the following observation are made:

- There is complete horizontal equity with regard to acquisition taxes.
- There is complete horizontal equity with regard to property taxes.
- With the exception of the two-year period (2000/01 and 2001/02) when there is equity, the horizontal inequities favoured the homeowners with regard to income taxation.
- The inequity again favours the homeowners with regard to capital gains taxation.

The overall tax obligation comparisons between the homeowners and the tenant / landlords mimic the results for income taxation. Horizontal inequities favouring the homeowners are the results of the first ten years of MIRAS (50 occurrences) and the final eight years in which the tenant / landlord realised net rental income (40 occurrences), one of those years coinciding with the final year of sale when there is a capital gains tax inequity favouring the same. Thus, two years of equity exist (2000/01 and 2001/02) with the absence of the MIRAS effect and the taxable rental income. Table 5.25 therefore shows 10 occurrences of equity and 90 occurrences of inequities favouring the homeowners.

The differences between the homeowners and the tenant / landlords are due to capital gains taxation (a cumulative difference in favour of the homeowners of £58,077¹¹⁶), the benefit of MIRAS for the homeowners (a cumulative difference in favour of the homeowners of £24,459) and the variations in income taxes in the final eight years

¹¹⁶ This cumulative difference is detailed in Table 5.23.

of the simulation due to recognised rental income (a cumulative difference in favour of the homeowners of £39,800).¹¹⁷ The cumulative total difference of £122,336 is how much less tax overall the homeowner occupiers paid over the twenty-year period. This is reflected in the third column of Table 5.27.

Table 5.27 Differences in cumulative overall tax obligations between UK homeowners and tenant / landlords

Income Multiples	Homeowner Occupiers <small>Pages 3-8</small>	Tenant Landlords <small>Pages 39-44</small>	Differences (Current £) <small>Pages 51-56</small>	Differences (Constant £) <small>Pages 57-62</small>
½	£18,359	£22,015	-£3,656	-£5,447
1	64,326	72,667	-8,341	-11,519
2	162,938	183,315	-20,377	-24,488
4	464,712	504,686	-39,974	-44,651
5	611,312	661,300	-49,988	-54,961
Cumulative	<u>£1,321,647</u>	<u>£1,443,983</u>	<u>-£122,336</u>	<u>-£141,066</u>

Appendix II (Summaries of Specific and Overall Taxes), various pages referenced.

United States

Given the user cost framework in which this research is set, it is appropriate to limit further analyses involving US property taxation to the assumption of economic incidence. In other words, the alternative investors incur an equivalent property tax obligation to the tenant / landlords in that such obligations are assumed to be entirely capitalised into the rental obligations. It is under this assumption that the analysis of overall tax obligations is conducted and now summarised.

In summary of the horizontal equities and inequities detected in the specific tax obligations with respect to the US homeowners and alternative investors, the following observations are made:

- With regard to acquisition taxes, there are 5 occurrences of horizontal inequity favouring the alternative investors in the initial year and 95 occurrences of horizontal equity in the subsequent years of study.
- There are 6 occurrences of horizontal inequity favouring the homeowner occupiers and 94 occurrences of horizontal equity with regard to property taxes.

¹¹⁷ £24,459 + £39,800 = £64,259 which may be traced back to Table 5.9.

- There are 30 occurrences of horizontal equity between the two lower tiered homeowners and alternative investors while all other results are horizontal inequities favouring the homeowners due to itemizing deductions.
- There are 2 occurrences of horizontal equity (among the two lower tiers) and 3 occurrences of horizontal inequity favouring the homeowners with regard capital gains taxes.

Of the 30 occurrences of horizontal equity noted above with respect to the income tax analysis, there is a reclassification when the scope is widened to the overall tax obligations of 6 incidences, 4 now reflecting horizontal inequity favouring the homeowner occupier and 2 reflecting a favouritism towards the alternative investor. The four in favour of the homeowner occupiers are the result of the lowest tiered homeowner occupier (US-H^{1/2}) receiving a small property tax concession in the first six years of study as compared with the tenant / landlords (and alternative investors). In the first year however, the favouritism is towards the alternative investors for the two lower tiered investors due to the acquisition taxes paid by the homeowner occupiers. These being the only reclassifications, there are 24 occurrences of horizontal equity and 74 occurrences of inequity favouring the homeowners and 2 occurrences of horizontal inequity favouring the alternative investors as depicted in Table 5.25. The cumulative differences in the overall tax obligations are summarised in Table 5.28.

Table 5.28 Differences in cumulative overall tax obligations between US homeowners and alternative investors

Income Multiples	Homeowner Occupiers <small>Pages 63-68</small>	Alternative Investor <small>Pages 75-80</small>	Differences (Current \$) <small>Pages 87-92</small>	Differences (Constant \$) <small>Pages 93-98</small>
½	\$14,632	\$15,081	-\$449	-654
1	82,061	82,474	-413	-462
2	235,371	269,756	-34,385	-45,990
4	664,871	787,283	-122,411	-160,532
5	906,406	1,085,533	-179,127	-232,760
Cumulative	<u>\$1,903,341</u>	<u>\$2,240,127</u>	<u>-\$336,785</u>	<u>-\$440,398</u>

Appendix II (Summaries of Specific and Overall Taxes), various pages referenced.

Upon initial comparison of the overall tax obligations, the tenant / landlords generally incur greater annual tax liabilities throughout the study. The two lower levels of income and investment (US-TL½ and US-TL1) are the exceptions to this general statement. During the first thirteen years of the study, these case families incur lower tax liabilities as a result of the same claim to the standard deduction as their homeowner occupant counterparts plus their allowance of passive losses to offset general income. Even in the subsequent years when the tenant / landlords realise greater tax liabilities, these are relatively insignificant until 2009 when the capital gain is realised. The other levels of income and investment families (US-TL2, US-TL-4 and US-TL5) all realise greater overall tax obligations throughout the time frame analysed.

In summary of the horizontal equities and inequities detected in the specific tax obligations with respect to the US homeowners and tenant / landlords, the following observations are made:

- There is complete horizontal equity with regard to acquisition taxes.
- There are 6 occurrences of horizontal inequity favouring the homeowner occupiers and 94 occurrences of horizontal equity with regard to property taxes.
- There are 74 occurrences of horizontal inequity favouring the homeowners due to itemizing deductions and 26 occurrences of inequities favouring the tenant / landlords with regard to the lower tiered tenant / landlords (US-TL½ and US-TL1) claiming rental losses in the first 13 years of the study.
- There is complete horizontal inequity favouring the homeowners with regard capital gains taxes.

The one reclassification of equity when the scope is widened from income tax to the overall tax obligations is with regard to the lowest level of income and investment homeowner (US-H½) in 1992. While US-TL½ has a lower income tax obligation due to the recognition of a rental loss, US-H½ has an even lower property tax obligation due to special concession. With this sole reclassification, there are 25

occurrences of horizontal inequity favouring the tenant / landlords and 75 occurrences of inequity favouring the homeowner occupiers as reflected in Table 5.25. The cumulative inequities are quantified and summarised in Table 5.29.

Table 5.29 Differences in cumulative overall tax obligations between US homeowners and tenant / landlords

Income Multiples	Homeowner Occupiers <small>Pages 63-68</small>	Tenant Landlords <small>Pages 99-104</small>	Differences (Current \$) <small>Pages 111-116</small>	Differences (Constant \$) <small>Pages 117-122</small>
½	\$14,632	\$17,453	-\$2,821	-\$2,456
1	82,061	98,042	-15,981	-14,439
2	235,371	304,374	-69,003	-74,031
4	664,871	851,440	-186,569	-213,895
5	906,406	1,181,666	-275,260	-331,546
Cumulative	<u>\$1,903,341</u>	<u>\$2,452,975</u>	<u>-\$549,634</u>	<u>-\$636,367</u>

Appendix II (Summaries of Specific and Overall Taxes), various pages referenced.

Conclusions, comparisons and contrasting results

The UK and the US vary significantly in owner-occupier housing taxation. The four specific tax policies examined earlier comprise the overall tax obligation, which is of particular interest in this research. The analysis of the overall tax obligations serves to highlight variations in a wider context than simply within the specific elements. For instance, the effect of certain policies may offset the effects of others, or may be more or less significant when time value is considered. Table 5.30 summarises the horizontal inequities quantified earlier in Tables 5.26 and 5.28 and makes a monetary comparison of the two countries' results by assuming a common currency. The US dollars are translated to UK pounds with a £1 = \$1.60 exchange rate.

Table 5.30 A comparison of the overall tax differentials between homeowner occupiers and alternative investors in absolute monetary terms using a common currency (UK£)

Income Multiples	United States Overall Tax Differentials (US\$) ¹¹⁸	United States Overall Tax Differentials (UK£)	United Kingdom Overall Tax Differentials (UK£) ¹¹⁹	Differences between US and UK (UK£)
1/2	-\$449	-£281	-£2,834	£2,553
1	-413	-258	-4,589	4,331
2	-34,385	-21,490	-5,192	-16,298
4	-122,411	-76,507	-4,952	-71,555
5	-179,127	-111,954	-4,793	-107,161
Cumulative	-\$336,785	-£210,490	-£22,360	-£188,130

Table 5.31 A proportional analysis of the overall tax differentials of US and UK homeowner occupiers to their respective alternative investors setting the converted US differentials at 100%

Income Multiples	US Overall Tax Differentials (UK£) Respective Overall Tax Differentials Set at 100%	UK Overall Tax Differentials Percentages to US Differentials	Differences: Percentages to Total Percentages of respective difference to total difference
1/2	100%	1008.5%	-1.4%
1	100%	1778.7%	-2.3%
2	100%	24.2%	8.7%
4	100%	6.5%	38.0%
5	100%	4.3%	57.0%
			<u>100.0%</u>

Calculations are based on the data provided in Table 5.31

As is evident from the results in Tables 5.30 and 5.31, the differences in inequities between the two countries studied vary widely with regard to income levels. The two lower tiered case families invested in homes in the UK receive a significant tax benefit in comparison with their US counterparts. This is almost entirely due to the significance of MIRAS in the early years of the study in contrast to the insignificance of mortgage interest and real estate tax relief for the US case families at that level of income and investment. The favouritism swings dramatically to the US homeowner occupiers at the higher tiers of income and investment given the

¹¹⁸ The reader is referred back to Table 5.28 for this detail.

¹¹⁹ The reader is referred back to Table 5.26 for this detail.

restrictions on MIRAS as explained earlier and the unrestricted mortgage interest and real estate tax allowances realised by the US case families. These overall differences however, have been dampened by the assessment of the US capital gains tax on the three higher tiered case families in contrast to the UK case families escaping such taxation. Table 5.32 summarises the horizontal inequities quantified earlier in Tables 5.27 and 5.29 and makes a monetary comparison of the two countries' results by assuming a common currency (UK£ where £1 = \$1.60). Table 5.33 uses the data provided in Table 5.32 to provide the reader with the proportional perspective.

Table 5.32 A comparison of the overall tax differentials between homeowner occupiers and tenant / landlords in absolute monetary terms using a common currency (UK£)

Income Multiples	United States Overall Tax Differentials (US\$) ¹²⁰	United States Overall Tax Differentials (UK£)	United Kingdom Overall Tax Differentials (UK£) ¹²¹	Differences between US and (UK£)
1/2	-\$2,821	-£1,763	-£3,656	£1,893
1	-15,981	-9,988	-8,341	-1,647
2	-69,003	-43,126	-20,377	-22,749
4	-186,569	-116,606	-39,974	-76,632
5	<u>-275,260</u>	<u>-172,038</u>	<u>-49,988</u>	<u>-122,050</u>
Cumulative	<u>-\$549,634</u>	<u>-£343,521</u>	<u>-£122,336</u>	<u>-£221,185</u>

Table 5.33 A proportional analysis of the overall tax differentials of US and UK homeowner occupiers to their respective tenant / landlords setting the converted US differentials at 100%

Income Multiples	US Overall Tax Differentials (UK£) Respective Overall Tax Differentials Set at 100%	UK Overall Tax Differentials Percentages to US Differentials	Differences: Percentages to Total Percentages of respective difference to total difference
1/2	100%	207.4%	-0.8%
1	100%	83.5%	0.7%
2	100%	47.2%	10.3%
4	100%	34.3%	34.6%
5	100%	29.1%	<u>55.2%</u>
			<u>100.0%</u>

¹²⁰ The reader is referred back to Table 5.29 for this detail.

¹²¹ The reader is referred back to Table 5.27 for this detail.

A further examination of the two countries' overall tax impact in terms of horizontal equity calls for the comparison the *overall* average tax rates. These are the rates as determined by the relationship of the sum of the specific tax obligations (cumulative for the twenty year period) to the cumulative incomes and gains for each investor.¹²² The US and UK percentages of the respective cumulative specific taxes to cumulative income and gains are listed in Table 5.34 with the sums equalling the overall average tax rates for each of the three investors.

Table 5.34 Comparison of overall average tax rates for all three investors in both countries with variation to homeowner occupiers

		Homeowner Occupiers ¹²³	Alternative investors ¹²⁴	Tenant / Landlords ¹²⁵
United Kingdom	Acquisition Taxes	0.10%	0.06%	0.10%
	Property Taxes	1.58%	1.66%	1.51%
	Income Taxes	24.77%	26.66%	25.02%
	Capital Gains Taxes	<u>0.00%</u>	<u>0.00%</u>	<u>1.12%</u>
	Overall Taxes	<u>26.45%</u>	<u>28.38%</u>	<u>27.75%</u>
	Variation to homeowners		<u>1.93%</u>	<u>1.30%</u>
United States	Acquisition Taxes	0.05%	0.00%	0.05%
	Property Taxes	2.85%	3.03%	2.74%
	Income Taxes	14.36%	18.09%	15.98%
	Capital Gains Taxes	<u>0.00%</u>	<u>0.41%</u>	<u>2.56%</u>
	Overall Taxes	<u>17.26%</u>	<u>21.53%</u>	<u>21.33%</u>
	Variation to homeowners		<u>4.27%</u>	<u>4.07%</u>

An interesting observation on examining the results summarised in Table 5.34 is that the UK income tax average is nearly 10% higher across all investors. Not only is this the result of the different tax rate structures, but the impact of the standard and itemized deductions and the allowance of certain rental losses in the US.

¹²² The reader is referred to Chapter 4 (Methodology), Section 4.6.2 (Measuring the systems' overall progressivity) beginning on page 123 for a full explanation of this average tax rate.

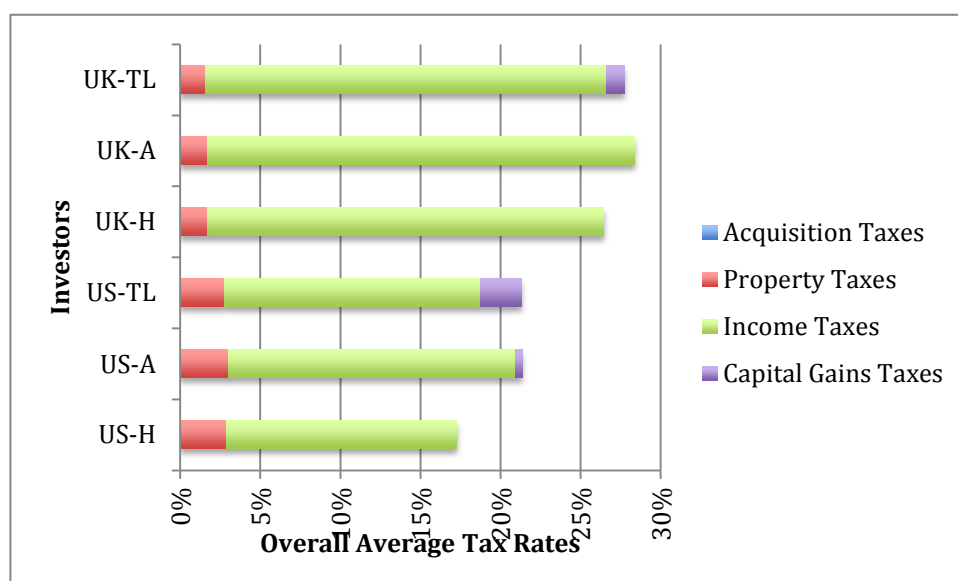
¹²³ The reader is referred to Tables 6.11 and 6.13 in Chapter 6 (An Evaluation of Vertical Equity (Progressivity)) for these details.

¹²⁴ The reader is referred to Table 6.13 and 6.16 in Chapter 6 (An Evaluation of Vertical Equity (Progressivity)) for these details.

¹²⁵ The reader is referred to Table 6.12 and 6.17 in Chapter 6 (An Evaluation of Vertical Equity (Progressivity)) for these details.

There are more prominent variations in the average tax rates between the other US investors and homeowner occupiers as compared with the UK investors. In both countries, the homeowners are obliged to remit the least amount of tax as a percentage to their cumulative incomes and gains largely as a result of the respective mortgage interest reliefs. The alternative investors in both countries remit the most amount of tax as a percentage to their cumulative incomes and gains. With respect to the US case families, this is the result of rental loss recognition and/or the allowance of depreciation in calculating the rental income (losses). In the UK, the tenant / landlords are able to reduce their average tax rates by ensuring half of the rental income is recognised by the non-wage earning spouses who are able to offset it with otherwise unutilised personal allowances with any residual taxable income taxed at lower tax rates than the marginal rate applicable to the working spouses. It is because of this nuance in the UK income tax system that the tenant / landlords have less of a variation in the overall average tax rate with the homeowner occupiers as compared with the alternative investors, despite the taxation of capital gains by the former and not the latter. A graphical depiction of the overall average tax rates for the three types of investors considered in the two countries' studies are provided in Figure 5.6.

Figure 5.6 Comparison of overall average tax rates for all three investors in the UK and the US



5.2. Horizontal equity: conclusions

Research Question 1, which asks how horizontally inequitable are the owner-occupied housing tax policies in each country studied, is broken down into three sub-questions. These sub-questions are answered by way of an overall conclusion on horizontal equity.

All monetary statements are in current terms, without consideration for the time value of money. This is for the ease of cross-referencing to earlier sections of this chapter. The corresponding constant monetary terms are all provided within the detail of the chapter.

5.2.1. How horizontally inequitable are the specific tax policies?

The **UK acquisition tax system** does not differ between those investing in housing for occupation or for rental purposes. There is however, a differentiation with respect to the taxation of land and buildings versus financial securities. With respect for like for like taxation (i.e. property investment), there is no favouritism in the UK acquisition tax system towards homeownership. If one widens the scope and compares the taxation of all investments in capital assets, the UK tax system taxes property investments more heavily than financial investments, showing favouritism towards an investor in securities over the property investor. Given the 1990/91 flat tax rate, the horizontal inequity is proportional to the acquisition value involved once the threshold has been exceeded.

The **US acquisition tax system** for property transactions vary among the states. The tendency is for proportional taxation with no differentiation between owner-occupied housing and rental real estate as is assumed within the simulation. This being the case, there is no favouritism for investors in homes in the US acquisition tax system. The investment in financial securities is generally not taxed in the US. Like the situation in the UK, there is no favouritism shown with like for like investment (property for occupation versus rental investment), and the US investors in financial securities are similarly favoured over those investing in real estate property.

The **UK property tax systems** studied within the time frame of the UK study tax the occupants of property, rather than the legal owners. This being the case, there is no favouritism within the property tax systems resulting in complete horizontal equity.

The **US property tax system** varies among states and municipalities. A particular State's policy that is in line with the national averages and deemed a reasonable example of most States' policies is assumed within the simulation. A slight concession is given to the lowest tiered homeowner (US-H $\frac{1}{2}$), introducing a horizontal inequity in the early years of the study. This amount is negligible however; totalling \$589 for the six years it was present. For the rest of the study however, there is no differentiation between investors in properties for ownership and occupation or for rental investment purposes. The US property tax system taxes the owners rather than the occupiers of properties, therefore introducing horizontal inequity with respect to formal incidence. However, given the user-cost framework assumed within, the cost of property taxation may be assumed to be fully capitalised into the rental demands and passed onto the tenants of rental properties. Therefore, economically, there is effectively no horizontal inequity in the US property tax system.

The **UK income tax system** allowed a mortgage interest deduction until 1999/2000 causing a horizontal inequity favouring homeowner occupiers. In this study of five representative case families, the total inequity due to MIRAS amounted to £24,459. The limitation of qualified indebtedness of MIRAS and the rate restrictions had the effect of making the horizontal inequity a decreasing function of the value involved once the ceiling of £30,000 was met and higher tax bracket was realised.

In addition to MIRAS, the homeowner occupiers are favoured over the tenant / landlords with respect to the rental income realised by the latter and the non-taxation of a comparable imputed rental income of the former. This horizontal inequity amounted to £39,800 for all five case families. Given the application of graduated income tax rates to the net rental income recognised in the later years of study, the resulting horizontal inequity is a decreasing function of the value involved. The conclusion being that the non-taxation of an imputed rental income widens the gap between investors in homes for occupation versus investment.

Table 5.35 summarises the proportional analyses of the other UK investors to the homeowner occupiers. The data clearly depicts the decreasing functions of the favourable tax treatment of the UK homeowner occupiers as well as the greater variations between the homeowners and the tenant / landlords as compared with the alternative investors.

Table 5.35 Proportional analysis of the differences in cumulative income tax obligations between UK homeowners and alternative investors where the respective homeowner obligations are set at 100%

Income Multiples	Homeowner Occupiers <small>Set at 100%</small>	Alternative Investors <small>% to Homeowners</small>	Tenant Landlords <small>% to Homeowners</small>
½	100%	131.3%	141.1%
1	100%	109.2%	112.6%
2	100%	103.8%	108.2%
4	100%	101.3%	104.3%
5	100%	101.0%	103.9%

Sources: Tables 5.8 and 5.10

The **US income tax system** allows for mortgage interest relief as well as a real estate tax deduction for homeowners resulting in a significant horizontal inequity. Given the five case families studied within, the total difference due solely to these allowances amounted to \$298,979 over the twenty-year period studied. The relief realised at marginal rates makes the resulting horizontal inequity an increasing function of the value involved.

In addition to the favouritism shown to homeowners through these deductions, as in the UK, the US homeowner occupier does not recognised an imputed rental income comparable to the net rental income taxable to landlords. As a result, favouritism is inherent in such a system for homeowner occupiers. However, given the provision for an accelerated depreciation deduction, the potential for rental losses, particularly in the early years of activity, masks this favouritism. The total additional tax paid by the five tenant / landlords simulated in this study amounted to \$254,295. As expected, the additional income tax obligation incurred by the tenant / landlords reduces the inherent inequity from the itemized deductions claimed by the homeowner occupiers. The effect is a cumulative reduction of \$44,684 in income

taxation. Taking the time value of money into consideration, the variation is \$65,979.

Table 5.36 summarises the proportional analyses of the other US investors to the homeowner occupiers. The data clearly depicts the increasing functions of the favourable tax treatment of the US homeowner occupiers as well as the greater variations between the homeowners and the alternative investors as compared with the tenant / landlords.

Table 5.36 Proportional analysis of the differences in cumulative income tax obligations between US homeowners and alternative investors where the respective homeowner obligations are set at 100%

Income Multiples	Homeowner Occupiers	Alternative Investors	Tenant Landlords
	Set at 100%	% to Homeowners	% to Homeowners
1/2	100%	104.0%	61.0%
1	100%	101.6%	97.3%
2	100%	114.9%	110.4%
4	100%	119.3%	115.5%
5	100%	120.8%	119.4%

Sources: Tables 5.13 and 5.15

The US tenant / landlords realises net rental losses until 2003, partly as a result of the depreciation allowance. The lower tiered families are able to reduce general income by these losses, given the provisions of IRC Section 469. The higher tiered tenant / landlords are partly or fully restricted with recognising the losses under IRC Section 469. It is for this reason the percentage of income tax obligations reflected in Table 5.36 for the tenant / landlords to homeowner occupiers is lower (and significantly so for the lower tiers), as compared with the percentages of income tax liabilities of the alternative investors to homeowner occupiers.

The **UK capital gains tax system** favours homeowners with the complete exemption of their realised capital gains on qualified principal residences. However, there is inadvertent horizontal equity with alternative investors who are able to structure their tax affairs in such a way as to take advantage of the dual annual exemptions available to married individuals with shared capital assets and legally avoid capital gains taxation. The tax system favours the investors in property for occupation as

opposed to investment (i.e. rental and speculation) and the total inequity measured in this study is £58,077 for all five case families.

The **US capital gains tax system** only taxes the capital gains in excess of \$250,000 (\$500,000 for taxpayers married filing jointly) realised from the sale of a principal residence, effectively exempting a significant majority of US taxpayers. This creates horizontal inequities with investors in other capital assets (i.e. financial securities as well as investment properties). The total inequities measured in this study for the five levels of income and investment are \$43,077 and \$294,750 in favour of the homeowner over the alternative investor and the tenant / landlord, respectively. The significant differences between the two are due to two factors. First, the capital gains realised by the tenant /landlords are based on the appreciation of the total investment (i.e. debt and equity financed) whereas the alternative investors realise capital gains based solely on their equity investment. Second, the tenant / landlords realise an additional tax obligation on the recaptured depreciation. The result of these two factors yield combined capital gains and IRC Section 1250 gains realised by the US tenant / landlords which is five times the capital gains realised by the US alternative investors.

5.2.2. How horizontally inequitable is the combined overall effect of the respective owner-occupier housing tax policies in each country on an annual and longitudinal basis?

The differences in overall tax obligations between homeowners and alternative investors are attributed to acquisitions taxes (a cumulative difference in favour of the alternative investors of £2,099¹²⁶) and the MIRAS benefit (a cumulative difference in favour of the homeowners of £24,459¹²⁷). The cumulative net difference of £22,360 is how much less overall tax the homeowner occupiers paid over the twenty-year period in current monetary terms.

¹²⁶ This cumulative difference is detailed in Table 5.2.

¹²⁷ This cumulative difference is detailed in Table 5.7.

With respect to the acquisition taxes, periodic sales are simulated for the higher tiered alternative investors (UK-A2, UK-A4 and UK-A5) for the explicit purpose of avoiding capital gains taxation. In so doing however, additional acquisition taxes are incurred on reinvestment. The cost of avoiding £15,068 in capital gains taxation at the three affected levels of income and investment is an additional £1,582 in acquisition taxes. This is included in the £2,099 net difference between the homeowner occupiers and the alternative investors. Had the simulation not recognised these early sales, the variation in overall taxes between the two investors would have increased to £35,846 (the culmination of £3,681 in acquisition taxes, £24,459 in MIRAS benefits and £15,068 in capital gains taxes).

The differences between the UK homeowners and the tenant / landlords are due to capital gains taxation (a cumulative difference in favour of the homeowners of £58,077¹²⁸), benefit of MIRAS for the homeowners (a cumulative difference in favour of the homeowners of £24,459) and the variations in income taxes in the final eight years of the simulation due to recognised rental income (a cumulative difference in favour of the homeowners of £39,800). The cumulative total difference of £122,336 is how much less tax overall the homeowner occupiers paid over the twenty-year period in current monetary terms.

The total overall tax obligations (i.e. the sum of all four specific taxes for all twenty years) for the UK homeowner occupiers, alternative investors and tenant / landlords are £1,321,647, £1,344,007 and £1,443,983, respectively. Reconciliations to the homeowner occupiers overall tax obligations are provided in Table 5.37.

¹²⁸ This cumulative difference is detailed in Table 5.19.

Table 5.37 Reconciliations of other UK investors' overall tax obligations to those of the UK homeowner occupiers

	UK Alternative Investors	UK Tenant / landlords
Overall Tax Obligations ¹²⁹	£1,344,007	£1,443,983
Additional acquisition taxes paid by UK homeowner occupiers ¹³⁰	2,099	-
MIRAS benefits received by UK homeowner occupiers ¹³¹	(24,459)	(24,459)
Additional income tax paid by UK tenant / landlords ¹³²	-	(39,800)
Capital gains taxes paid by UK tenant / landlords ¹³³	-	<u>(58,077)</u>
Overall tax obligations of the UK homeowner occupiers ¹³⁴	<u>£1,321,647</u>	<u>£1,321,647</u>

With respect for the variation between the US homeowner occupiers and the alternative investors, the overall tax difference of \$336,785 is the combination of \$5,859 in acquisition taxes incurred by the homeowners offset with \$589 in a minor property tax concession for the lowest tiered homeowner occupier (US- H½) and \$298,979 itemized deductions benefiting the homeowners against the \$43,077 in capital gains taxes incurred by the alternative investors.

¹²⁹ The reader is referred to Tables 5.26 and 5.27.

¹³⁰ The reader is referred to Table 5.2.

¹³¹ The reader is referred to Table 5.7.

¹³² The reader is referred to Table 5.9 (£39,800 is included in the £64,259 difference in current £s. This additional difference is attributed to MIRAS of £24,459.).

¹³³ The reader is referred to Table 5.23.

¹³⁴ The reader is referred to Tables 5.26 and 5.27.

The two lower tiered US tenant / landlords realised the advantage in lower income tax liabilities in the first 13 years of the period studied due to their ability to recognise their rental losses while also claiming the same standard deduction available to the homeowner occupants. Thereafter, net rental income is realised and swings the favouritism to the homeowner occupiers. Throughout the study, the higher tiered tenant / landlords all realised higher income tax liabilities (and therefore, overall tax liabilities). The most significant contributor to the differences in the overall taxation rests with the capital gains taxes imposed on the tenant / landlords in the final year of the study. The exception to this is with the highest tiered tenant / landlord (US-TL5) where the income tax variation surpasses CGT.

The total horizontal inequity favouring the homeowner occupiers over the tenant / landlords in overall taxation is \$549,634 for all five case families. This consists of \$589 in property tax concessions for the lowest tiered homeowner occupier (US-H½), \$254,295 in mortgage and real estate tax relief for all homeowners net of the reduction in income tax from the rental activities and the associated alternative minimum tax of the tenant / landlords, and \$294,750 in capital gains tax and income tax on the recaptured depreciation realised by the tenant / landlords.

The total overall tax obligations (i.e. the sum of all four specific taxes for all twenty years) for the US homeowner occupiers, alternative investors and tenant / landlords are \$1,903,341, \$2,240,127 and \$2,452,975, respectively. Reconciliations to the homeowner occupiers overall tax obligations are provided in Table 5.38.

Table 5.38 Reconciliations of other US investors' overall tax obligations to those of the US homeowner occupiers

	US Alternative Investors	US Tenant / landlords
Overall Tax Obligations ¹³⁵	\$2,240,127	\$2,452,975
Additional acquisition taxes paid by US homeowner occupiers ¹³⁶	5,859	-
Property tax concession received by US homeowner occupiers ¹³⁷	(589)	(589)
Mortgage interest and real estate tax reliefs received by US homeowners ¹³⁸ ; net of income tax reduction from rental activities for US tenant / landlords ¹³⁹	(298,979)	(254,295)
Capital gains taxes paid by US other investors ¹⁴⁰	<u>(43,077)</u>	<u>(294,750)</u>
Overall tax obligations of the US homeowner occupiers ¹⁴¹	<u>\$1,903,341</u>	<u>\$1,903,341</u>

¹³⁵ The reader is referred to Tables 5.28 and 5.29.

¹³⁶ The reader is referred to Table 5.3.

¹³⁷ The reader is referred to page 148 of Section 5.1.2.

¹³⁸ The reader is referred to Table 5.12.

¹³⁹ The reader is referred to Table 5.14.

¹⁴⁰ The reader is referred to Table 5.24.

¹⁴¹ The reader is referred to Tables 5.28 and 5.29.

5.2.3. How does the horizontal equity of one country's specific tax policies and the overall tax impact compare with the other country studied?

With regard to acquisition taxation, the UK and US homeowner occupiers and tenant / landlords are horizontally equal as the respective investors incur the same tax liabilities. Differences occurred between the countries' respective sets of homeowners and alternative investors. The UK alternative investors incur acquisition taxes on their initial investments, subsequent investments and, in certain circumstances, reinvestments. These 0.5% tax assessments narrow the monetary gap between the UK homeowner occupiers and the alternative investors. The US alternative investors do not incur acquisition taxes, nor is there an exemption available for the lower tiered homeowners. The result is greater horizontal inequities within the US system as compared with the UK system. This is established by a monetary comparison of horizontal inequities presented in Table 5.39 (reproduction of Table 5.4).

Table 5.39 A comparison of the acquisition tax differentials between homeowner occupiers and alternative investors in absolute monetary terms using a common currency (UK£)

Income Multiples	United States Acquisition Tax Differentials (in US\$) ¹⁴²	United States Acquisition Tax Differentials (in UK£s)	United Kingdom Acquisition Tax Differentials (in UK£s) ¹⁴³	Net differences between US and UK (in UK£s)
1/2	234	146	-57	203
1	469	293	311	-18
2	938	586	402	184
4	1,874	1,172	642	530
5	<u>2,344</u>	<u>1,465</u>	<u>801</u>	<u>664</u>
Cumulative	<u>5,859</u>	<u>3,662</u>	<u>2,099</u>	<u>1,563</u>

The property tax system in the UK assesses the occupants rather than the owners of properties. Therefore, there is complete horizontal equity between homeowner occupiers and the tenants of rental properties. The US tax system assesses the

¹⁴² The reader is referred back to Table 5.3 for this detail.

¹⁴³ The reader is referred back to Table 5.2 for this detail.

owners of the properties rather than the occupants. Therefore, a horizontal inequity exists in the formal sense of property tax incidence. However, the simulation is set within the user-cost framework and accordingly, the real estate taxes incurred by the landlords are assumed to be capitalised into the rental income of the property. The economic incidence effects being that the tenants incur the property tax obligation indirectly. That said, there is not complete horizontal equity in the US study due to a small concession in the early years for the lowest tiered US homeowner occupants (US-H $\frac{1}{2}$). The result being horizontal inequities with the other two US investors of a total amount of \$589 for the six affected years. This is the only recorded inequity among the US case families. The conclusion being that in spite of the differences in assessment criteria, there exists nearly complete horizontal equity between homeowners and the other investors in both countries.

The UK income tax system favoured homeowners with mortgage interest relief until its abolition in 1999/2000. The US income system continues to grant allowances for mortgage interest relief as well as real estate taxes incurred. The total horizontal inequity between the homeowners and alternative investors in the UK and the US are £24,459 and \$298,979, respectively, entirely due to the relief for mortgage interest (and real estate taxes in the US). Significant differences between the two countries' application of mortgage interest relief result in very different horizontal inequities as observed at the five levels of income and investment. The restricted UK allowance results in an inequity that is a decreasing function to the value involved, whereas the effectively unrestricted¹⁴⁴ US allowance, which is only realised at the higher levels of income and investment due to the available standard deduction, results in an inequity that is an increasing function of the value involved.

The UK income tax system ring-fences net rental losses and allow them against future net rental income from the same property. The US allows the losses at the lower tiers (US-TL $\frac{1}{2}$, US-TL1 and US-TL2) but partially or wholly disallows them for the higher tiers (US-TL4 and US-TL5) until they may be used against future rental income or until the property is sold. Neither the US nor the UK recognises an imputed rental income within their income tax system. The total horizontal inequity

¹⁴⁴ The US allowance is not actually unrestricted. Section 3.2.1 of Chapter 3 (Country Summaries) discusses the restriction of mortgage interest on qualified acquisition indebtedness of £1 million and less. The case families considered in this study did not exceed this limit.

between the homeowners and tenant / landlords in the UK and the US are £64,259 and \$254,295, respectively. These differences represent the combined impact of mortgage interest relief (and real estate tax in the US), the respective rental loss allowance rules relevant to the early part of the study and the recognition of rental income in the later years.

The UK capital gains tax system exempts the homeowner occupier from capital gains taxation. The US system exempts the significant majority of taxpayers with generous allowances (\$500,000 MFJ). All US case families are exempt from capital gains taxation within the simulation. The UK alternative investors are able to avoid CGT and are inadvertently horizontally equal with the homeowners as a result. The inequity in the UK tax system rests entirely between the homeowner occupiers and the tenant / landlords, the difference being £58,077. The US alternative investors incur CGT and therefore a horizontal inequity of \$43,077. The US tenant / landlords not only incurred CGT on their realised capital gains, but also on the depreciation recapture in the year of sale. This yields a significant difference between the nil-liability homeowners and the tenant / landlords, a cumulative amount of \$294,750.

The overall taxation of the homeowner occupiers is lower than the two other investors in both countries. In the UK, the variation between homeowners and alternative investors and homeowners and tenant / landlords is 1.93% and 1.30% of comprehensive income, respectively. In the US the variations are greater: 4.27% and 4.07% between the homeowner occupiers and the alternative investors and homeowner occupiers and tenant / landlords, respectively. The detail of these variations is reflected in Table 5.28 of Section 5.1.5.

As reflected in the various tables in Section 5.1.5, the homeowner occupiers of both countries have lower overall tax obligations when compared with the alternative investors and tenant / landlords at all five levels of income and investment. The differentials within the two countries are comparable under a common currency. Table 5.40 summarises the proportions of the differences in tax obligations between the UK homeowner occupiers and other investors with the US case families, where the US differentials are set at 100%. As evident from the data within, the US tax system favours the homeowner occupiers over the alternative investors more significantly at the three higher tiers of income and investment in comparison with

the UK tax system. The two lower tiers are more significantly favoured in the UK tax system. The US tax system favours the homeowner occupiers over the tenant / landlords more significantly at all but the lowest tier of income and investment when compared with the UK tax system.

Table 5.40 A proportional analysis of the overall tax differentials of US and UK homeowner occupiers to their respective other investors setting the respective converted US differentials at 100%

Income Multiples	US Overall Tax Differentials (to Other Investors)	UK Overall Tax Differentials (Alternative Investor)	UK Overall Tax Differentials (Tenant / Landlord)
	Set at 100%	% to US Differentials	% to US Differentials
1/2	100%	1008.5%	207.4%
1	100%	1778.7%	83.5%
2	100%	24.2%	47.2%
4	100%	6.5%	34.3%
5	100%	4.3%	29.1%

Sources: Tables 5.31 and 5.33

5.2.4. Conclusion

This analysis has focussed on the horizontal equity aspect of the specific tax policies that affect homeowner occupiers as well as the overall tax impact in comparison with investors in alternative capital assets (i.e. rental real estate and financial securities). Horizontal equity is considered in the classical sense (Smith, 1999/1776; Sidgwick, 1883; Musgrave, 1959; Atkinson 1970), rather than the modified (re-ranking) approach associated with Feldstien (1976). The chosen methodology of micro-simulations of representative agents ensures such an analysis is possible. The analysis considers the two interpretations as established by Johnson and Mayer (1962), which are with and without regard to any monetary differences. With regard for such differences, the magnitude of the inequities is established in absolute monetary terms and, in the case of income taxation, in terms of proportionality. Differences in effective tax rates are also quantified, further highlighting the inequities in tax policies and tax systems.

The methodology used within the study considers the *paired, within-country and cross-country analyses* in accordance with the methodology established by Maylor and Blackmon (2005). The systematic approach undertaken in the simulations is

intended to eliminate researcher bias and establish a basis for analytical generalisation. The goal of the comparative micro-simulation approach is to establish theoretical generalisation under the replication logic as opposed to statistical generalisation under sampling logic. Two countries with very different approaches to homeownership taxation would be expected to yield different results for predictable reasons. This is the case with regard to the equity aspects of the tax policies and systems of the UK and the US, when they are compared and contrasted.

The US specific tax policies relevant to homeownership and the overall tax system as defined within this study have greater inherent horizontal inequities when compared with the UK tax policies and tax system. The greater differences are primarily attributed to the continued allowance of the US mortgage interest and real estate tax deductions in comparison with the once limited and then disallowed mortgage interest relief in the UK. However, this research clearly establishes the fact that lower tiered US homeowner occupiers are not significantly advantaged with regard to income taxation in comparison with the alternative investors and, in fact, are significantly disadvantaged in comparison with the respective tenant / landlords. This is due to the fact that the standard deduction available to everyone has been raised to such a level as to be the default deduction for lower tiered homeowner occupiers. The tax advantage from the mortgage interest and real estate tax relief in the US income tax system is apparent only at the higher levels of income and investment, and increases going up the income and investment scale as the relief is given at marginal income tax rates. Therefore, the horizontal inequity in the US income tax system as a result of such favouritism is an increasing function of the value of the tax discrimination involved. This is in direct contrast with the results found in the UK study where MIRAS was limited in terms of indebtedness and applicable income tax rates. Given these restrictions, the horizontal inequity resulting from such favouritism is a decreasing function of the value involved. In sum, given the differences between the two countries' tax provisions for mortgage interest relief, the results differ for predictable reasons.

The differences between the two countries provisions for eligible rental activity deductions and allowable rental losses have varying horizontal inequity effects as well. The UK landlord may not claim a depreciation deduction against rental income

whereas the US landlord may. This significantly impacts the simulated early years' net losses and the subsequent years' net incomes in that the UK tenant / landlords realise net losses in the first three years whereas the US tenant / landlords realise net losses in the first 12 years of study. The UK tenant / landlords are unable to utilise the losses against general income whereas the US tenant / landlords, at the lower levels of income and investment, may do so under IRC Section 469. It is for these reasons that the horizontal inequity (as established by the mortgage interest relief) is accentuated between the homeowner occupiers and the tenant / landlords within the UK simulation whereas the inequity is reduced within the US simulation.

The final significant contributing factors affecting the inherent horizontal inequities of the two countries are due to the respective capital gains tax systems. Firstly, the ability of the UK alternative investors to escape capital gains taxation by taking advantage of the generous annual exemptions is contrasted with no such ability in the US tax system. Therefore, the horizontal inequities between the US homeowner occupiers and the alternative investors is increased as a result of capital gains taxation with no such impact within the UK tax system. Secondly, the US taxation of recaptured depreciation of the tenant / landlords widens the gap between the US homeowner occupiers and the tenant / landlords. This is not an issue within the UK tax system as depreciation is not allowed.

In conclusion with regard to the UK micro-simulation, there is very little difference between the homeowner and the alternative investor now that MIRAS has been abolished. Further, the ability of the UK alternative investor to escape capital gains taxation compromises the discussion of such taxation of the UK homeowner occupiers based on the claim of favourable tax treatment. There is a clear tax preference when homeowner occupiers are compared with tenant / landlords with regard to both imputed rental income and capital gains taxation. The decision as to which party the homeowner occupier should ideally be neutral is therefore required.

In conclusion with regard to the US micro-simulation, the mortgage interest relief creates significant horizontal inequities between homeowner occupiers and other investors only once the standard deduction is surpassed. Given the simulation variables, individuals within the median income and investment range do not benefit from the tax provision. The issue therefore is really from a vertical perspective,

which is the topic of discussion in the following chapter. The non-taxation of imputed rental income and capital gains of the US homeowner occupiers creates significant horizontal inequities between such taxpayers and tenant / landlords at all levels of income and investment. The principal residence exemption from capital gains taxation is of no consequence between the two lower tiered homeowner occupiers and alternative investors. The simulated alternative investors at twice, four-times and five-times the median income realise capital gains tax obligations on their investments, resulting in significant horizontal inequities with the homeowner occupiers at those respective levels of income.

Chapter 6: An evaluation of vertical equity (progressivity)

While horizontal equity calls for the “equal treatment of equals”, vertical equity calls for “an appropriate differentiation among unequals” (Musgrave 1990, p113). Optimal tax theory suggests that an equitable tax “guarantees a socially desirable distribution of the tax burden” (Rosen 2005, p344-5). The distribution of the tax burden is determined by the tax structure and progressivity of the tax system. With reference to Smith’s (1776) *ability-to-pay criterion* which was present in even earlier literature, it is well recognised that society desires a certain degree of progressivity in the tax system in satisfaction of “an appropriate differentiation”. Progressivity is therefore indicative of vertical equity.

The second research proposition is that tax equity should be determined on a vertical basis. The difficulty in judging vertical equity is that it is subjective. Vertical equity calls for a degree of progressivity in the tax system as a whole, but the degree of progressivity is a matter for public and political debate. As progressivity can be objectively evaluated, the second research question and sub-questions regarding vertical equity are with specific reference to progressivity. Conclusions on vertical equity will be based on the analyses of progressivity.

Research Question 2: How vertically equitable (progressive) are the owner-occupied housing tax policies in each country studied?

- How progressive are the specific tax policies?
- How progressive is the combined overall effect of the respective owner-occupier housing tax policies in each country on a longitudinal basis?
- How does the progressivity of one country’s specific tax policies and the overall tax impact compare with the other country studied?

With regard to this analysis, progressivity (and therefore vertical equity) is evaluated with reference to specific taxation and overall taxation, on an annual and a cumulative basis.

Figure 6.1 **The analytical steps underpinning chapter 6 (page 1 of 5)**

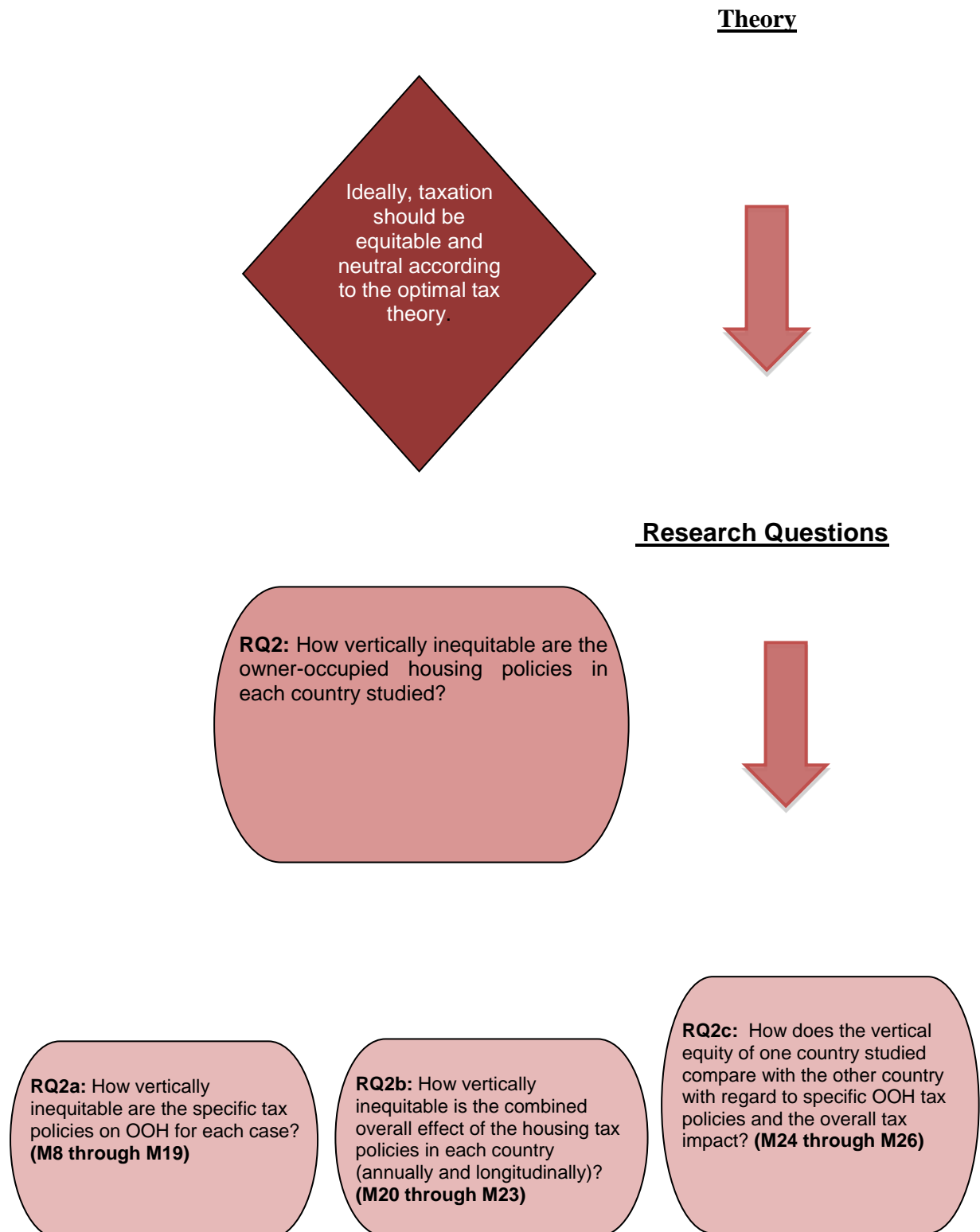


Figure 6.1 The analytical steps underpinning chapter 6 (page 2 of 5)

Point and Paired Analysis

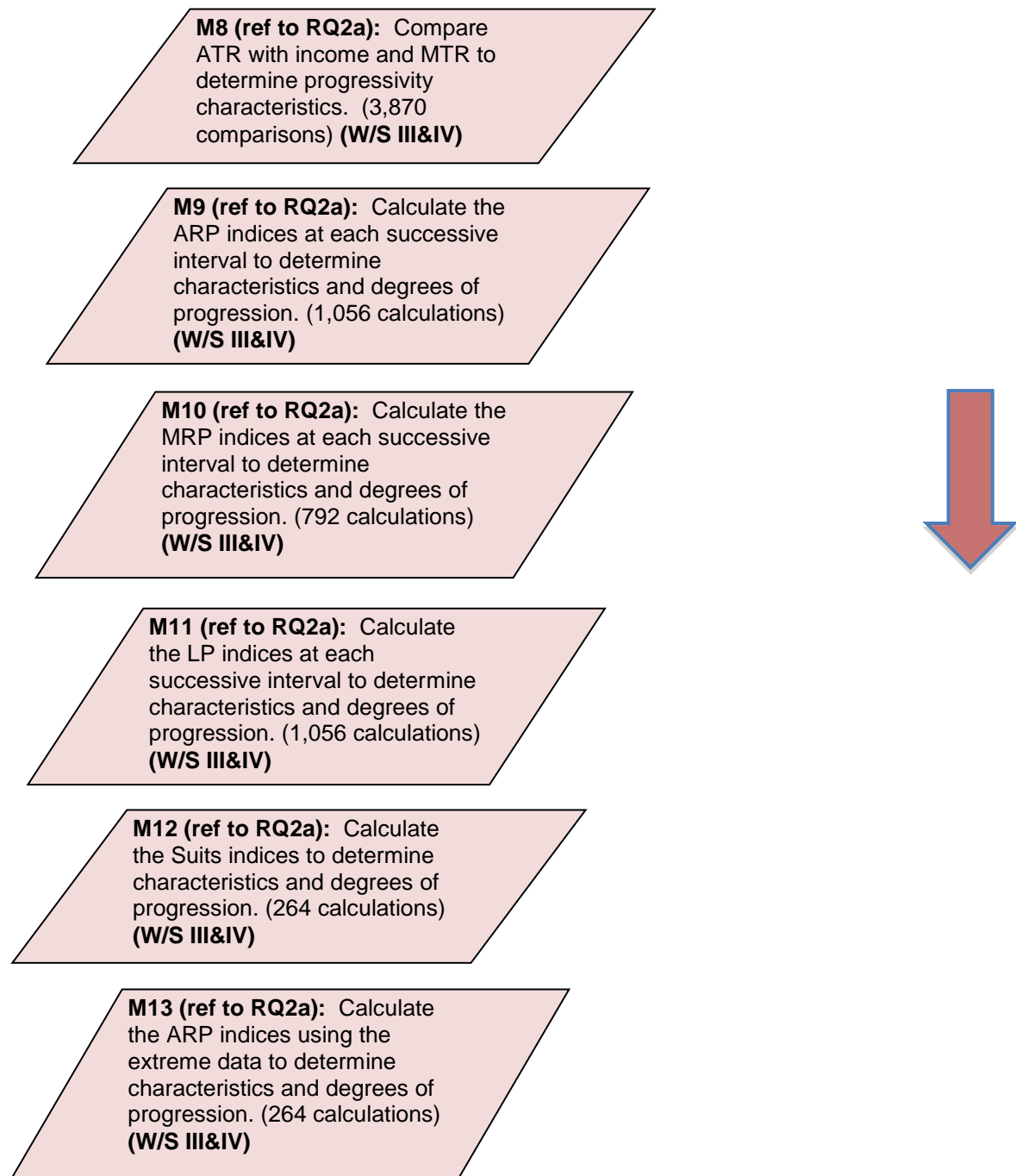


Table 6.1 The analytical steps underpinning chapter 6 (page 3 of 5)

Point and Paired Analysis

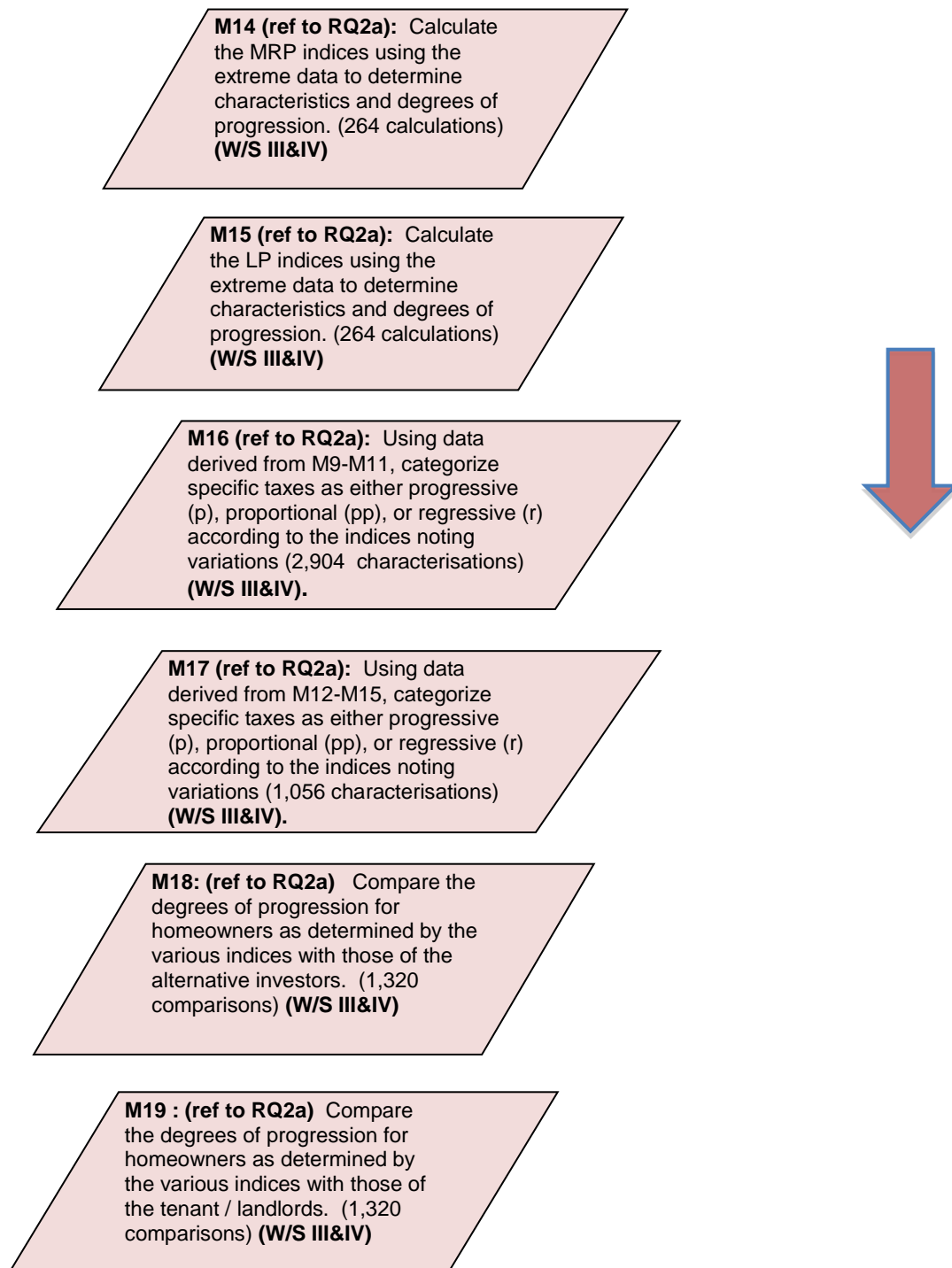
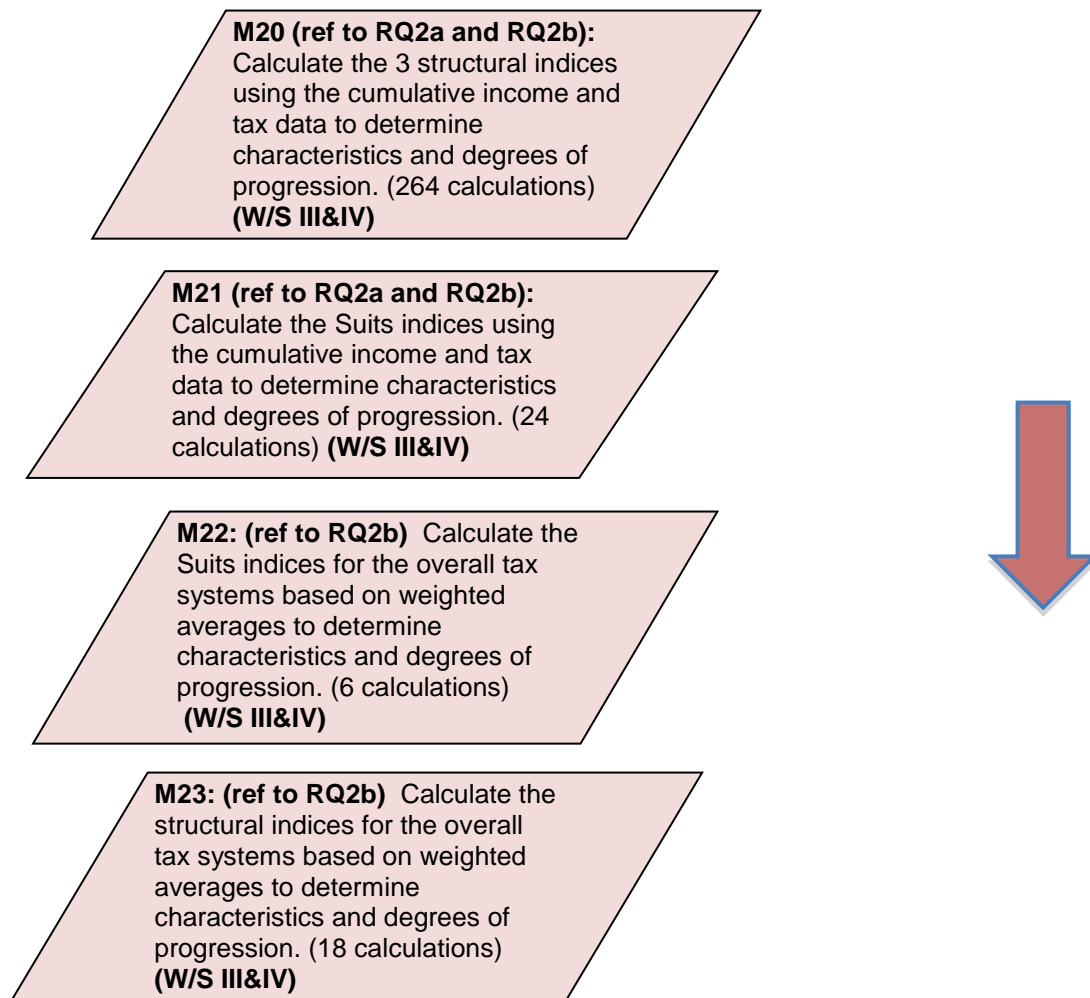


Figure 6.1 The analytical steps underpinning chapter 6 (page 4 of 5)

Point and Paired Analysis



Within-country Analysis

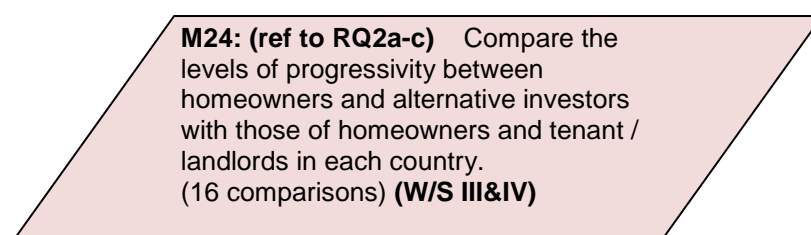
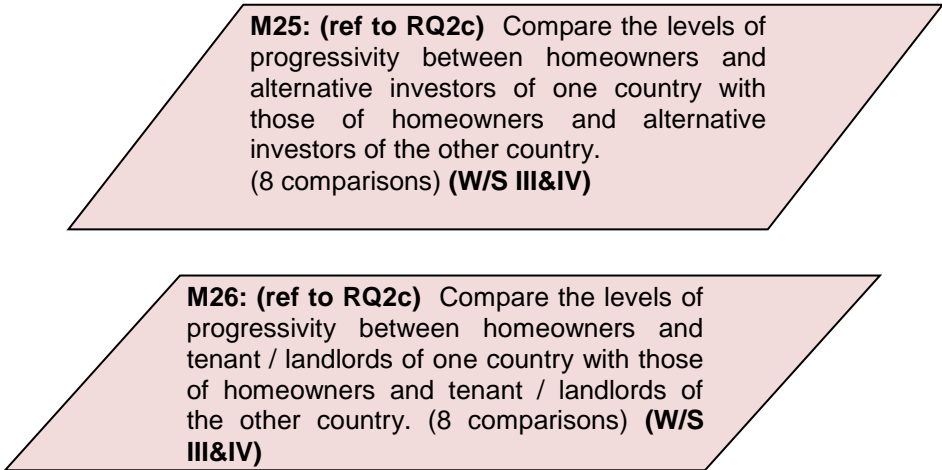


Figure 6.1 The analytical steps underpinning chapter 6 (page 5 of 5)

Cross-country Analysis



M25: (ref to RQ2c) Compare the levels of progressivity between homeowners and alternative investors of one country with those of homeowners and alternative investors of the other country. (8 comparisons) **(W/S III&IV)**

M26: (ref to RQ2c) Compare the levels of progressivity between homeowners and tenant / landlords of one country with those of homeowners and tenant / landlords of the other country. (8 comparisons) **(W/S III&IV)**

6.1. Vertical equity (progressivity): results

The purpose of this section is to answer the above research question and sub-questions on vertical equity. The vertical equity of the tax policies and overall tax systems are initially analysed independently for a *within-country* analysis and then comparatively for the *cross-country* analysis in accordance with the multiple case study methodology established by Maylor and Blackmon (2005). The reader is referred back to Section 4.5.2 of Chapter 4 (Methodology) for a complete discussion on the indices and methods used in this analysis. A brief summary of the methods employed for establishing and quantifying vertical equity and inequity in this research is first provided for the reader's convenience.

A diagram of the first three steps of the deductive process undertaken in this phase of the research is provided in Figure 6.1. This section begins with an overview of the methodology applicable to vertical equity evaluation with footnoted references to the nineteen methods (M8 through M26) found in Figure 6.1. The findings are then reported in the tax-specific sub-sections (i.e. Sections 6.1.1 through 6.1.5), with conclusions, comparisons and contrasting results at the end of each sub-section. Finally, the relevant research question and sub-questions are answered in Section 6.2, thus concluding the deductive process in evaluating vertical equity.

Tax systems are deemed progressive when average tax rates rise with income and regressive when average tax rates fall as income rises. If the average tax rates remain constant despite income rises and falls, then the system is deemed proportional. Another equally reliable test is to compare the average tax rates to the marginal tax rates. When average tax rates are less than marginal tax rates the tax policy or system is progressive, equality means proportionality, and when the average tax rates are greater than the marginal tax rates, the tax policy or system is regressive (Musgrave and Thin (1948), Rosen (2005), among others).

The initial stage in analysing vertical equity is in determining whether specific tax policies or tax systems are progressive, proportional or regressive. The four specific tax policies studied in each country are identified in such terms based on the

respective average tax rate relationships with income and marginal tax rates as established in the simulations.¹⁴⁵

Measuring the degree of progressivity quantifies how progressive or regressive a tax policy or system may be. This is necessary when the research aim is to make thorough cross-sectional comparisons, with-in and across countries. That is, the following research objectives may be achieved through these measurements:

- Confirmation of the general characteristic classifications made by examining the average and marginal tax rates (i.e. progressive, proportional or regressive);
- Comparability between the different taxpayer/investors (i.e. is the tax treatment of the homeowners more or less progressive than that of the alternative investors?);
- Comparability between time periods with regard to the recurrent taxes (i.e. has the taxation of a specific taxpayer increased or decreased in progressivity in successive years?);
- Comparability of trends in progression for recurrent and overall taxation over the entire study period for each specific taxpayer / investor;
- International comparability;
- Provision of the basic foundation on which an *overall progression index* is determined.

Three of the four structural progression indices established by Pigou (1928) and Musgrave and Thin (1948) are used to determine the degrees of progressivity for the specific and overall tax burdens simulated in the UK and the US studies. First, the average rate progression (ARP) indices are calculated which focus on “*the rate of change in the average rate of tax*” (Musgrave and Thin 1948, p 499).¹⁴⁶ What is effectively being measured is the slope of the progression curve derived by plotting average tax rates against net income (before exemptions). Next, the marginal rate progression (MRP) indices are calculated focussing on “*the rate of change in the marginal tax rate*” (Musgrave and Thin 1948, p 503).¹⁴⁷ Third, the liability

¹⁴⁵ The reader is referred to M8 of Figure 6.1.

¹⁴⁶ The reader is referred to M9 of Figure 6.1.

¹⁴⁷ The reader is referred to M10 of Figure 6.1.

progression (LP) indices are calculated which considers “*the ratio of the percentage change in tax liability to the concurrent percentage change in income*” (Musgrave and Thin 1948, p 504).¹⁴⁸

In addition to the three structural indices, one distributional index established by Suits (1977) is used to measure the degrees of progressivity as established by the case families within the simulations. The Suits Index (SI) is a modified version of the Lorenz curve and corresponding in Gini coefficient, which is adaptable to the small ‘sample’ data produced in the simulations. Given the five levels of income and corresponding taxation, Suits indices are calculated for each tax, each year, in both countries.¹⁴⁹

The various and numerous indices derived are initially examined to determine whether they indicate progression, proportionality or regression with respect to the specific taxes studied. These findings are compared with the findings from comparing average tax rates with income and marginal tax rates.¹⁵⁰ Any differences are noted, examined further and explained.

In addition to the structural progressivity measurements between each successive level of income (e.g. US-H1 : US-H2 and UK-A4 : UK-A5), the progressivity is measured using the extreme data (e.g. UK-TL ½ : UK-TL-5).¹⁵¹ This yields an overall progression index for each specific tax, each year, within the simulation. Again, the results are first examined for the characteristic of the specific tax (i.e. progressive, proportional or regressive).¹⁵² Any differences are noted, examined further and explained.

After the initial examination, the respective indices are compared with those derived from the other investors to identify the individuals with greater/lesser progressivity as determined by the respective tax systems.¹⁵³ The trends of progression may also

¹⁴⁸ The reader is referred to M11 of Figure 6.1.

¹⁴⁹ The reader is referred to M12 of Figure 6.1.

¹⁵⁰ The reader is referred to M16 of Figure 6.1.

¹⁵¹ The reader is referred to M13 of Figure 6.1.

The reader is referred to M14 of Figure 6.1.

The reader is referred to M15 of Figure 6.1.

¹⁵² The reader is referred to M17 of Figure 6.1.

¹⁵³ The reader is referred to M18 of Figure 6.1.

The reader is referred to M19 of Figure 6.1.

be determined by comparing successive annual indices with respect to the recurring taxes (i.e. property tax and income tax). Trend analysis however is covered in greater detail in Chapter 8.

In addition to the annual analyses, structural indices are calculated based on the cumulative income and tax obligations for the recurring taxes to determine the degrees of progression for the 20-year period of study.¹⁵⁴ This provides a manageable basis on which to compare the progressivity of the three investors in a clear, concise manner.

Suits indices are also calculated based on the total income and corresponding tax obligations for the 20-year period for property tax and income tax, to determine the degrees of progression based on cumulative data.¹⁵⁵ These results are compared with those determined by the structural indices, noting and examining any variations.

The cumulative results are then used to determine overall progression indices¹⁵⁶, a fundamental feature specific to Suits Indices. Suits established in his seminal work “the index for a system of two or more taxes is the weighted average of the indices for the individual taxes, with respective average tax rates as weights” (Suits, 1977, p751). The weighting is based on average tax rates as determined by comprehensive income. The results are compared with the other investors within each country¹⁵⁷ and with the corresponding investors in the other country for a cross-country analysis¹⁵⁸, for a final conclusion on where the greatest levels of progression rest.

The methodology established by Suits to deduce overall rates of progression based on weighting is applied to the structural indices in an attempt to replicate the results derived from the Suits overall tax measures.¹⁵⁹ The ARP, MRP and LP indices based on the cumulative specific taxes and incomes are weighted by the respective average tax rates (i.e. cumulative taxes to comprehensive incomes) to deduce extended structural indices; the sum of which yields indices of the overall UK and US tax systems. The order of progression derived by these indices is then compared

¹⁵⁴ The reader is referred to M20 of Figure 6.1.

¹⁵⁵ The reader is referred to M21 of Figure 6.1.

¹⁵⁶ The reader is referred to M22 of Figure 6.1.

¹⁵⁷ The reader is referred to M24 of Figure 6.1.

¹⁵⁸ The reader is referred to M25 of Figure 6.1.

The reader is referred to M26 of Figure 6.1.

¹⁵⁹ The reader is referred to M23 of Figure 6.1.

with the order of progression established by Suits.¹⁶⁰ It is expected that similar results can be obtained by applying the Suits methodology to structural measures of progressivity. In so doing, the researcher is extending the structural indices in a way which has not been attempted before.

6.1.1. Acquisition taxes

Investors in real estate, whether for occupation or investment, are taxed on acquisition in both the UK and the US. The UK taxes investors in financial securities whereas the US does not. The rates of taxation vary with regard to the UK property acquisitions while they are flat in the US.

The initial year of the study and the year in which the simulated case families invest in property or alternative investments is the fiscal year 1990/91 in the UK and the calendar year 1990 in the US. The analysis herein is on the acquisition tax liabilities simulated in those respective years.

United Kingdom

Stamp Duty was assessed at a flat rate of 1 per cent in the 1990/91-tax year on conveyances and transfers of land, buildings and property other than stocks and shares for consideration in excess of £30,000. Such a tax is what is referred to in the literature as “slab-tax structure” given the non-taxation of conveyances and transfers for consideration less than or equal to £30,000 and the full taxation at 1% of transactions in excess of the threshold. The “slab-tax” produces contradictory determinants of progression in that it has an average tax rate that rises with income (e.g. indicative of progression) but an average rate that is equal to the marginal rate (e.g. indicative of proportionality). It would, however, be incorrect to classify the system as proportional with two set rates (0% and 1%) and stages of proportionality (or proportional with effective progression) given the clear definition that proportionality exists when the same rate of tax is applied, regardless of income level (Norregaard (1990), OECD (1990), Rosen (2005), among others). Therefore, the UK acquisition tax is a progressive tax system.

¹⁶⁰ The reader is referred to M22 of Figure 6.1.

Stamp Duty Reserve Tax applicable to paperless acquisitions of securities is levied at a flat 0.5% tax rate without a threshold. Therefore this tax is proportional as the average tax rate equals the marginal tax rate and remains constant as income rises.

The Average Rate Progression (ARP) indices calculating the degree of progression from the least (UK-H $\frac{1}{2}$ and UK-TL $\frac{1}{2}$) to the greatest (UK-H5 and UK-TL5) are positive indicating a progressive acquisition tax system for the homeowner occupiers and the tenant / landlords. When the indices are examined in greater detail (i.e. at each level of income and investment) the acquisition taxes incurred by the property investors only show a degree of progression between the two lowest levels of income and investment (UK-H $\frac{1}{2}$: UK-H1 and UK-TL $\frac{1}{2}$: UK-TL1). This is due to fact that the homeowners and tenant / landlords earning half the median wage investing in properties fall under the threshold and do not incur acquisition taxes. At all other intervals of income and investment the ARP indices are nil, which is indicative of a proportional tax system. However, as expressed above, unless the same rate of tax is applied at all income levels, the system is not proportional.

With regard to the alternative investors, all APR indices are nil as expected given the proportional taxation with a flat rate of 0.5%.

The Marginal Rate Progression (MRP) indices calculated for the alternative investors are effectively zero, confirming a proportional acquisition tax system for all taxpayers affected. The MRP indices calculated on the acquisition tax data for homeowner occupiers and tenant / landlords indicate a regressive form of taxation at the lowest income range and proportionality thereafter. This is contrary to the information derived from ARP where progression is noted between the bottom levels of income (given the nil-rate band) followed by proportionality. The reason for this peculiarity is in the MRP formula itself. If the lowest tax liability in the formula is zero (as is the case with the UK acquisition taxes determined for case families UK-H $\frac{1}{2}$ and UK-TL $\frac{1}{2}$), the result is a negative numerator in the formula, which in turn produced a negative index. This type of contradiction is a recurring problem throughout the analysis with regard to the MRP index. When the indices differ the reasons are examined and explained and reliance is placed on the ARP index, as it is more robust in the sense that it is grounded in averages rather than margins.

Nil tax liabilities are problematic for the Liability Progression (LP) indices as well. The calculation of a LP index using UK-½ data is not possible, as the denominator in the first part of the equation would be zero. When the liabilities are zero the examination disregards the lowest level and relies on the remaining four levels results. All levels of income and investment for the homeowners and tenant / landlords with the exception of the lowest (UK-H½ and UK-TL½) yield Liability Progression (LP) indices of 1 indicating a proportional tax system. This is also the case for all levels of income and investment for the alternative investors as there is no threshold to consider in their calculations. These findings are consistent with those previously reported on average rate progression.

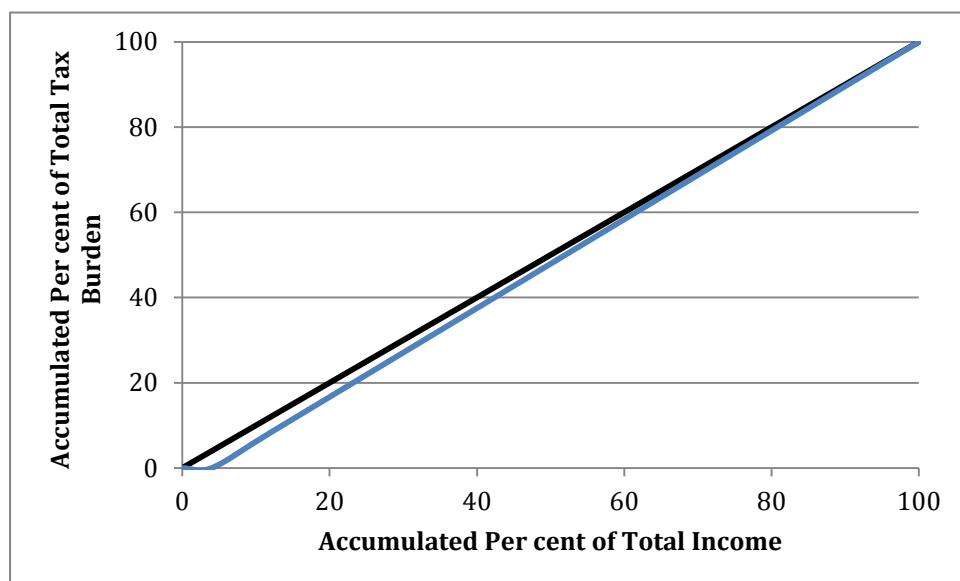
The Suits (S) index is positive at 0.0400¹⁶¹ indicating slight progression in the UK acquisition tax system. As the S index focuses on the distribution and uses all case families' income and tax liabilities, a graph of the corresponding Suits (S) curve is required in order to appreciate where the progression resides. This is provided in Figure 6.2.

The graph plots the accumulated percentage of tax liabilities (vertical axis) against the accumulated percentage of income (horizontal axis). A proportional tax would rest on the 45-degree line as 20% of the tax liability would accrue to 20% of the income, 80% of the tax liability would accrue to 80% of the income, *et cetera*. A progressive tax would result in an S curve bowing *below* the 45-degree line whereas a regressive tax would result in an S curve bowing *above* the 45-degree line.

The S curve in Figure 6.2 represents the distribution of the simulated UK acquisition tax. The bowing of the S curve at the lower ends of the two axes is indicative of the progression residing with the lower tiered property investors (i.e. the 0% applicable to the lowest tiered investor). The proximity of the curve to the 45-degree line further up the income scale is due to the flat applicable rate of 1%.

¹⁶¹ Appendix IV (Suits Indices), page 275.

Figure 6.2 Suits curve depicting the progression of the UK acquisition taxes for homeowner occupiers and tenant / landlords



Appendix III (Chapter 6 Figures), page 123.

United States

A flat rate of tax of half a per cent is assumed in the study with no available relief. Therefore the average tax rate equals the marginal tax rate and it remains constant as income rises. The acquisition tax policy assumed in this study and the policies adopted by most state and local legislators is proportional taxation.

The ARP and MRP indices calculated on the income and tax obligation data for the homeowner occupiers and the tenant / landlords equal zero, confirming a proportional acquisition tax system for property investors. The corresponding LP indices are 1 and the S indices calculated on the cumulative income and tax obligations are zero¹⁶², confirming the same.

The alternative investors do not incur acquisition taxes.

Conclusions, comparisons and contrasting results

The acquisition tax systems with regard to real estate investments in the two countries differs in that the UK taxes transactions in excess of a given threshold (e.g.

¹⁶² Appendix IV (Suits Indices), page 339.

£30,000) whereas most states within the US tax all property investments (i.e. no exemption allowance). The tax rates in the UK and the US are flat rates of 1% and 0.5%, respectively.

The UK Stamp Duty is a progressive tax system given the two rates of taxation (i.e. 0% if the threshold is not breached and 1% on the full consideration once the threshold is surpassed). The literature is quite clear that such a tax system is indeed progressive. The US simulated acquisition tax system is reflective of a proportional tax system as the same rate of tax is applied, regardless of consideration and there is no exemption. In the sense that vertical equity calls for a degree of progressivity, the UK acquisition tax system is more vertically equitable than the US acquisition tax system. These results are the same for the homeowner occupiers and the tenant / landlords of both countries as neither the UK nor the US acquisition tax systems differentiate between such investors.

The UK taxes alternative investors (i.e. investors in financial securities) at a flat rate of 0.5%, regardless of consideration. Thus, the UK Stamp Duty Reserve Tax applicable on such transactions is a proportional acquisition tax system. Most states within the US do not administer a similar tax and none is assumed in the simulation. This being the case, the UK proportional acquisition tax system is more vertically equitable when compared with the non-existent US acquisition tax system with respect to investments in alternative capital assets (e.g. financial investments).

6.1.2. Property taxes

The relevant UK property taxes are national taxes whereas the US states and local authorities have relatively complete autonomy with regard to property taxation. The US property tax system varies widely among the locales, in terms of assessment, rates, exemption criteria, *et cetera*. The total level of UK Council tax varies between local authorities but the banding is nationally set, in an attempt to ensure a level of vertical equity.¹⁶³

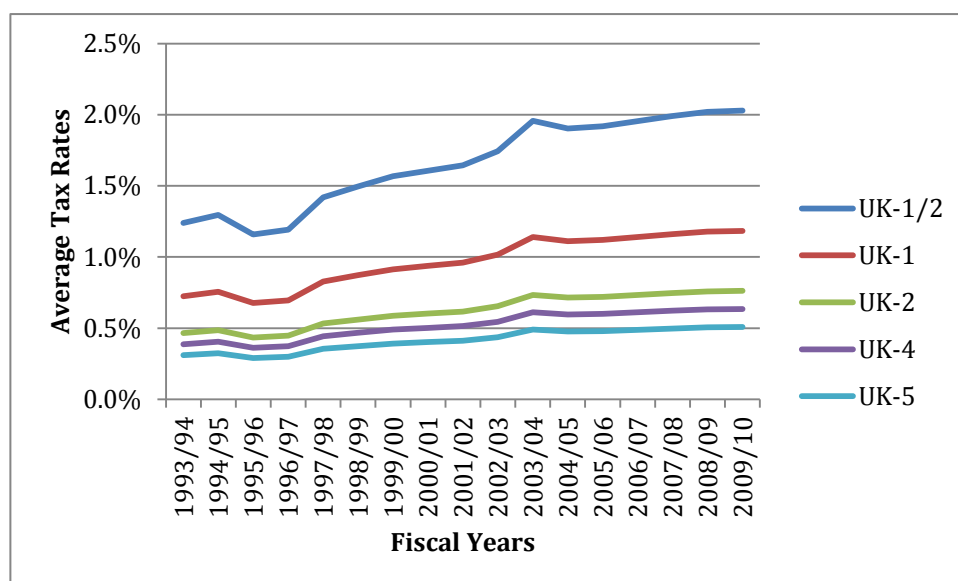
¹⁶³ The reader is referred to Chapter 3 (Country Summaries) for an in depth discussion on the various UK and US property tax systems.

United Kingdom

The UK property tax applicable in the first three years of the 20-year study is the Community Charge (Poll Tax). The Community Charge was highly regressive as it was a flat tax on the individual not linked to income at all.

The Council Tax succeeded the Community Charge in 1993/94 and is the relevant UK property tax for the remainder of the study. The council tax is also regressive as the average tax rates fall with income. This is illustrated in Figure 6.3 by annual comparisons of the five levels of income and investment. The lowest income earners (UK-1/2) incur the highest average rate of tax and the highest income earners (UK-5) incur the lowest average rate.

Figure 6.3 A comparison of average tax rates for UK council taxes assessed on all three investors



Appendix III (Chapter 6 Figures), page 124.

The community charge and council tax consistently register as regressive under the ARP calculations between every level of income and investment as well as between the two extremes (UK-1/2 and UK-5), measuring the degree of progression for the whole population. The average rate of progression for the council tax shows diminishing levels of regression as income increases up to the highest levels of income and investment (UK-4 and UK-5) when there is the second greatest degree of

regression (second to the lowest levels of income and investment: UK-½ and UK-1). This applies to all three types of investors, as the council tax liabilities are the same.

With regard to the MRP calculations, the regressivity of the council tax is greatest at the top-range of investors (UK-2, UK-4 and UK-5). The modified MRP (using UK-½, UK-2 and UK-5 tax and income data in the computations) measure only a very slight regression with the decimals taken to the 24th level. The Marginal Rate Progression is once again shown to be a less sensitive measure of progression in comparison with the Average Rate Progression.

The LP indices confirm regressive tax systems with respect to both the community charge and the council tax. Again, the results are the same regardless of investment choice as the liabilities are the same. The indices indicate diminishing levels of regression from the lower tier to the middle tier, consistent with the ARP results. There is however no change in progression between the higher tier families, as the tax liabilities are the same given the fact that both families fall within Band G for council tax assessment.

The structural indices calculated on the cumulative income and property tax obligations for the three UK investors with respect to the two property tax systems relevant to the study period are summarised in Table 6.1. As the three investors bear the same tax obligations, the indices are the same.

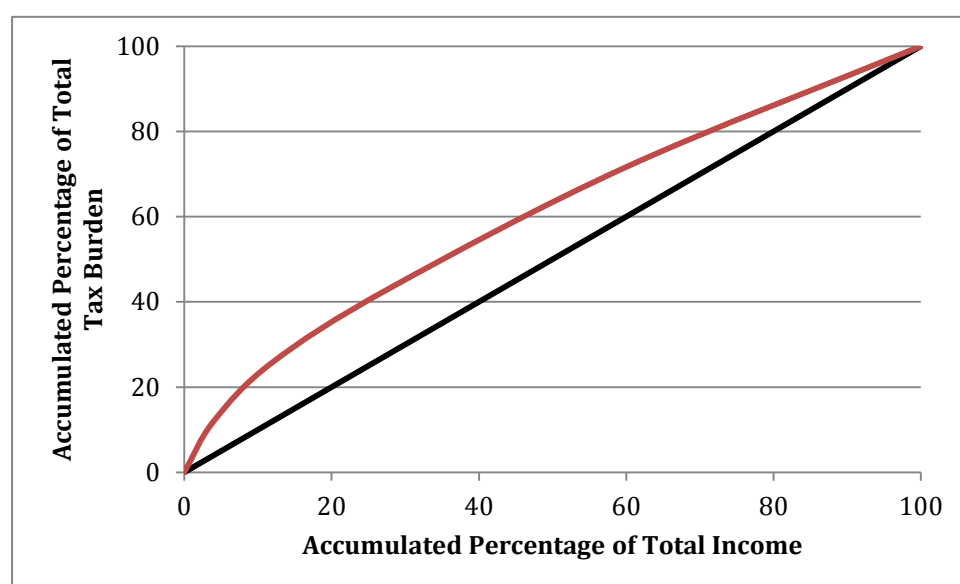
Table 6.1 Summary of structural indices applicable to the three investors in the UK property tax system

<u>Structural indices</u>	<u>Indices for all investors:</u>	<u>Progressivity Characteristic</u>
Average Rate Progression (ARP) p 141	-2.46774E-09	Regressive
Marginal Rate Progression (MRP) p 156	-1.26586E-25	Regressive
Liability Progression (LP) p 171	0.262131809	Regressive

Appendix IV (Structural Progression Indices), various pages referenced.

The Suits index calculations based on the annual property taxes are all negative, regardless of type of investor or tax year analysed, indicating a regressive tax system. The Suits index measuring the overall progressivity of property taxation as determined by the twenty years' worth of assessments is -0.2004^{164} . This significantly regressive form of taxation is depicted by the bowing of the S curve above the 45-degree line in Figure 6.4.

Figure 6.4 Suits curve depicting the regression of the UK property taxes for all three investors



Appendix III (Chapter 6 Figures), page 125.

United States

Relief from property taxes for the homeowner with the lowest levels of income and investment (US-H^{1/2}) is assumed in this study, thus introducing a minor element of progressivity. As such relief is contingent on the home being used as the principal residence, it is not available for the tenant / landlord. Only the first six years of the study yield a benefit from the relief assumed, thereafter the tax liabilities of the homeowner occupants and the tenant / landlords are equal at all levels of income and investment.

¹⁶⁴ Appendix IV (Suits Indices), page 299.

The property tax rate assumed in the study and consistent with the general administration of US property taxes throughout the country is a fixed rate of tax. The rate is the US averages as per the 1990 and 2000 Census', one per cent and one and one tenth per cent, respectively. As with the acquisition taxes the property taxes in this study (with the exception of the first six years for the lowest income earning homeowner) are proportional: the average tax rate remains constant with income and equals the marginal tax rate. While further testing of the US property tax system may not be considered necessary given its obvious proportionality, the results of the three structural indices and the Suits index are provided nonetheless as a testament to the robustness of the methodology.

The ARP indices determined for the homeowner occupiers are positive for the tax years 1990 through 1995 when the data used included the lowest tiered homeowner occupier (US-H $\frac{1}{2}$). This is the case for the measures of progression between the two lowest homeowner occupiers (US-H $\frac{1}{2}$ and US-H1) and the degree measurement for the whole group (US-H $\frac{1}{2}$ and US-H5). The positive results are indicative of progressivity, as expected, with consideration for the slight property tax concession realised by the lowest tiered homeowner. For the remaining years the ARP indices are effectively zero, confirmation of the proportional tax system. The MRP and LP indices are consistent with the ARP indices for the higher tiered homeowners in their indications of proportional taxation.

The ARP, MRP and LP indices calculated on the US property assessment and tax data for the tenant / landlords (and effectively the alternative investors) are consistent in their indications of proportional taxation.

The Suits indices for the homeowner occupiers are positive until 1996, when they then equalled zero for the duration of the study. The conclusion is the same: slight progressivity followed by proportionality. The Suits indices for the tenant / landlords (and effectively the alternative investors) are all zero, indicating a completely proportional property tax system.

The Suits index based on cumulative income and the relevant tax data for the homeowner occupiers is 0.0018¹⁶⁵, the slight indication of progressivity due to the

¹⁶⁵ [Appendix IV \(Suits Indices\)](#), page 363.

six early years of property tax concessions. The Suits indices for the alternative investors and tenant / landlords based on cumulative income and property taxes are zero, confirmation of complete proportionality throughout the study period. Given the close proximity to the 45-degree line, the slight progression of the homeowner occupiers is difficult to distinguish pictorially. Therefore a graph depicting the S curves for US property taxes has been omitted.

Conclusions, comparisons and contrasting results

The two relevant property tax systems considered within the UK study are both regressive tax systems, the council tax being less regressive than the community charge. As the UK property taxes are assessed on the occupiers of the property, rather than the owners, and there is no variation in tax with regard to homeownership, the vertical equity (or inequity as is the case) is the same for all three investors.

Unlike the UK, the US assesses its property tax on the owner of the property rather than the occupier. It is important to note however, that the economic incidence rather than the formal incidence is assumed in the analysis. Given the user-cost framework, the tenants of rental properties (i.e. the alternative investors in the study) would pay the property tax through their rental obligations.

The simulated US property tax is, for the most part, a proportional tax. The exception being with regard to homeowner occupiers in the first five years when the lowest tiered homeowner occupiers (US-H^{1/2}) enjoy a small tax concession. The US property tax system is slightly more equitable towards homeowners, given the early years' tax concessions when compared with the other investors.

Given a slightly progressive tax system in the first quarter of the study, followed by proportionality, the US tax system is more vertically equitable than the regressive UK property tax systems with regard to homeowner occupiers. With regard to the tenant / landlords, again the US tax system is more vertically equitable than the UK tax system given the fact the former is purely proportional and the latter is regressive. Finally, as the economic incidence is presumed within the US study, and the UK property tax accrues to the occupiers, the result is the same in that the US

proportional property tax system is indicative of greater vertical equity when compared with the regressive UK property tax system.

6.1.3. Income taxes

Both the UK and the US have progressive income tax systems with multiple levels of taxation and various exemptions, personal allowances and credits that enhance progressivity. The factors relevant to this study affecting the progressivity of the income tax systems with regard to the three types of investors in the two countries are: (1) mortgage interest relief; (2) real estate tax relief in the US; (3) the non-taxation of imputed rental income; and (4) the tax treatment of rental income and losses (including the depreciation allowance in the US).

Mortgage interest relief in the UK was limited in terms of eligible indebtedness and the rate of relief during the period of study until it was abolished entirely in 1999/00. All case families but the lowest tiered homeowner occupier (i.e. UK-H¹/₂ do not have debt in excess of £30,000) are affected by the ceiling on UK mortgage debt. The three higher tiered homeowner occupiers are affected by the limitation on the rate of relief (i.e. UK-2, UK-H4 and UK-H5 are higher rate taxpayers). The US allows for a generous level of indebtedness (\$1 million) in the provision of its mortgage relief. The ceiling is not a hindrance for any of the case families in the US simulation. Further, the US relief is realised at the marginal income tax rates. The differences in the mortgage interest relief provisions affect the progressivity of the respective income systems, as will be discussed in the following country-specific sections.

Neither country taxes homeowner occupiers on an imputed rental income but both countries tax the net rental income realised by investors in rental real estate. While the UK taxes individual units providing separate personal exemptions and tax bands, the US taxes married couples jointly adjusting the standard deduction and tax structure accordingly. These differences, which will also be discussed in the following country-specific sections, have an effect on the progressivity of the respective income tax systems.

The reader is first reminded of the basic data used to calibrate the micro-simulations. 1990 median income applicable to each country is used which then is increased by 3% annually throughout the respective countries' studies. Investment and

indebtedness are functions of income. The property investors are assumed to secure mortgages of 2.5 times their 1990 annual income, which represents 80 per cent of the value of the property. The alternative investors are assumed to have equal equity as their counterparts at the start of the study, and make further equity contributions to match those made through the repayment mortgage loans assumed by the property investors. Rent is determined under the user cost framework and reflects a constant percentage of the appreciating house values.

With regard to the income tax simulations for the homeowner occupiers and the alternative investors, income is simply comprised of the median income (adjusted for growth) each year of the study. For the tenant / landlords, income includes the net rental income (or loss with respect to US) as determined within the user cost framework. The UK personal allowances and US standard deductions and personal exemptions are the annual statutory provisions. In addition to mortgage interest and real estate taxes assumed in the US simulations, personal itemized deductions of 2% of income are assumed. Table 6.2 reflects the various elements of the UK micro-simulation with respect to the first year of study, 1990/91.

Table 6.2 Summary of numerical data used in the UK 1990/91 simulation

	UK-½	UK-1	UK-2	UK-4	UK-5
Income (Y)	£6,800	£13,600	£27,200	£54,400	£68,000
Investment equity (0.625Y)	4,250	8,500	17,000	34,000	42,500
House value (HV) (3.125Y)	21,250	42,500	85,000	170,000	212,500
Mortgage debt (2.5Y)	17,000	34,000	68,000	136,000	170,000
Mortgage interest (m)	2,619	5,238	10,475	20,950	26,188
MIRAS	655	1,155	1,849	1,849	1,849
Rental income (0.055HV)	1,169	2,338	4,675	9,350	11,688
Other rental expenses (excluding m) (0.005HV)	106	213	425	850	1,063

Table 6.3 reflects similar data for the US simulation with respect to the 1990 tax year.

Table 6.3 Summary of numerical data used in the US 1990 simulation

	US-1/2	US-1	US-2	US-4	US-5
Income (Y)	\$15,000	\$30,000	\$60,000	\$120,000	\$150,000
Investment equity (0.625Y)	9,375	18,750	37,500	75,000	93,750
House value (3.125Y)	46,875	93,750	187,500	375,000	468,750
Mortgage debt (2.5Y)	37,500	75,000	150,000	300,000	375,000
Mortgage interest (m)	2,613	5,226	10,452	20,904	26,129
Property taxes (pt)	355	938	1,875	3,750	4,688
Rental income (0.065HV)	3,047	6,094	12,188	24,375	30,469
Other rental expenses (excluding m and pt) (0.005HV+0.03485*.8HV)	1,541	3,083	6,165	12,330	15,413
Itemized deductions (m+pt+0.02Y)	3,268	6,763	13,527	27,054	33,817

Source: Charts and Tables (B418:G439)

The reader is referred back to Chapter 4 (Methodology) for further details of the data used in the simulations.

United Kingdom

The UK income tax system is a progressive tax system with at least two levels of tax rates noted during the period studied. In addition to the varied tax rates, personal allowances contribute to the degree of progressivity as they may be viewed as a zero rate band.

Table 6.4 shows the *cumulative* average income tax rates for the UK case families studied. These are based on the total tax liabilities and total income for all 20 years for the respective case families. As consistent with the two indications of progressivity, the average tax rates rise with income and fall below the respective marginal tax rates (MTR).

Table 6.4 Cumulative (1990/91 – 2009/10) average and marginal tax rates of UK income taxes

	Homeowner Occupiers	Alternative Investors	Tenant / Landlords	Respective MTR range
	Pages 3-7	Pages 15-19	Pages 39-43	
1/2	4.9%	6.4%	6.6%	20%-25%
1	14.5%	15.8%	15.6%	20%-25%
2	20.3%	21.1%	21.0%	40%
4	30.1%	30.5%	30.1%	40%
5	32.1%	32.4%	31.9%	40%

Appendix II (Summaries of Specific and Overall Taxes), various pages referenced.

The ARP indices calculated for all three investors are all positive, which is indicative of a progressive tax system. The greatest rate change in the progression of annual income taxation as detected by the ARP indices is between the two lowest levels of income and investment (UK-1/2 and UK-1), regardless of the type of investor. Thereafter the degrees of progression diminish at each subsequent level of income and investment with a few exceptions. First, there is an increase in the average rate progression between those earning twice the median income (UK-2) and those earning four times the median income (UK-4) in 1991/92 for the alternative investors and tenant/landlords. Second, there is an increase in the average rate progression between those earning twice the median income (UK-2) and those earning four times the median income (UK-4) for the homeowners and alternative investors in 2008/09 and 2009/10. The effects of the changes in tax bands on incomes relatively close to the respective thresholds may explain the inconsistencies with the other years. In 1991/92 there was a basic rate band increase of £3,000 and the middle tiered investors are within £1,000 of this threshold. The MIRAS effect on the rate of progression for the homeowners hides this effect. In 2007/08, the 10% tax band is abolished and in 2008/09, the middle tiered investors, except for the tenant / landlords, are within £4,000 of the thresholds.

A greater rate of progression is indicative of a more progressive tax system or policy given the points at which it is tested. Similarly, the greater the rate of progression between levels of income and investment, the more progressive the rate structure with respect to the tax system or policy. The initial analysis of the average rate progression indices here leads one to conclude the UK income tax system becomes less progressive at higher levels of income and investment (with the few exceptions noted in the preceding paragraph). This is not unexpected as Musgrave and Thin (1948) noted:

From previously noted properties of rate structure it follows that marginal as well as average rate progression will tend to decline when moving up the income scale (Musgrave and Thin 1948, p504).

The top UK income tax rate applicable for the entire study period is 40 per cent. With respect to the taxable income simulated for the UK case families, the three higher tiered families are taxed at the higher rate. UK-1 never exceeds the basic rate of tax.

Whereas the ARP indices consistently depict the income tax system as progressive throughout the study, the MRP has several contradictions with regard to the lowest and highest set measured (i.e. using the bottom or top three levels of income and investment in the calculation). With regard to the contradictions for the lowest set, these related to the early years of the study when there are no/minimal income tax obligations for the lowest investors (UK-1/2) impacting negatively on the MRP index calculations. The contradictions for the highest set where a few computations yield proportionality (nil indices) or very slight regression (negative indices set at 20 decimal places). These are the result of the same marginal tax rates (40%) realised by all three higher tiered investors, making it next to impossible for the MRP index calculations to detect progression. However, the indices derived from the mid-three levels of income and investment consistently indicated progressivity in the income tax system. Further, the MRP indices measuring the degree of progressivity between the extremes (UK-1/2 and UK-5) are all positive, confirmation of a progressive income tax system.

The direction of progression with regard to the three MRP indices on income taxation calculated for each year of the study shows an increase in progressivity from the lowest to the middle range, followed by a drop in progression from the middle to the top range of indices with respect to all three investors. This differs from the ARP indices where the degree of progression almost always decreases moving up the income scale. The differences are attributed to the variations in average tax rates between the levels of income. The lower levels increase on average by 10% (UK-½ to UK-1) then 5% (UK1 to UK-2) whereas the middle tiered investors' rates increase on average by 5% (UK-1 to UK-2) then 10% (UK-2 to UK-4). The effect on the MRP index calculations is a greater level of progressivity detected at the middle levels of investment.

Once again, progression is confirmed with the Liability Progression indices calculated for income taxes all yielding results greater than 1. The LP indices often indicate a greater level of progression between the two times and four times the median wage levels, contradicting the findings in the average rate progression which are fairly consistent diminishing levels of progression. The tenant / landlords and the alternative investors consistently show higher levels of progression between UK-2 and UK-4 as opposed to those levels recorded between UK-1 and UK-2. This is also the case with regard to the homeowners with the exception of the period of time between 1992/93 and 1997/98 where the levels of progression diminish at each successive level of income and investment. This is attributed to the same MIRAS relief realised by the respective taxpayers (UK-H1, UK-H2, UK-H4 and UKH5) and its impact on the Liability Progression index calculations. Quite simply, the denominators of the respective calculations decrease by identical amounts.

When the structural progression indices of the homeowners are compared with those calculated for the alternative investors and tenant / landlords the results are consistent in that the greatest levels of progression within the income tax system is observed with the homeowner occupiers, followed by the alternative investors and finally, the tenant / landlords showed the least progressivity of the three. The structural indices calculated on the cumulative income and tax obligations for the three UK investors with respect to the income tax system are summarised in Table 6.5 in order of progression, from least (TL) to greatest (H).

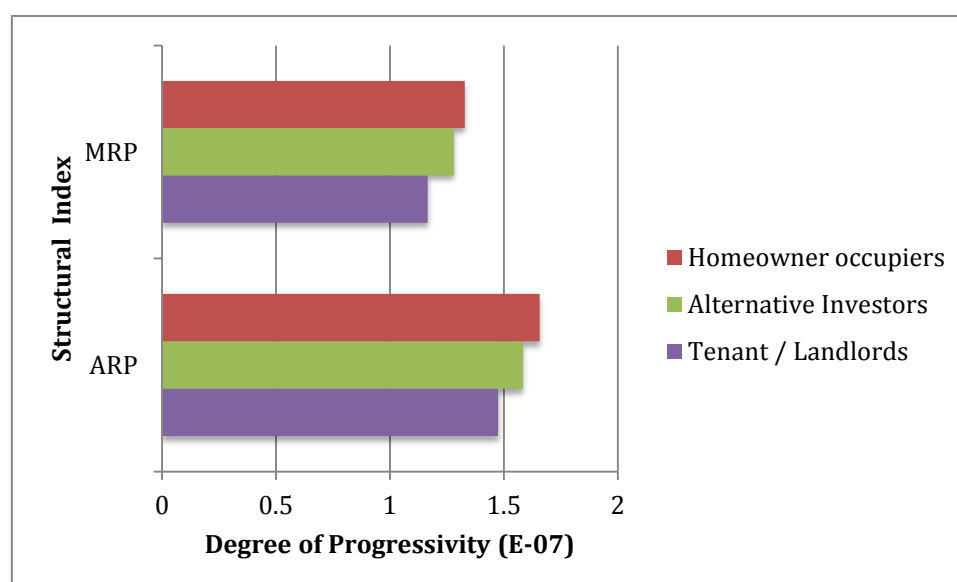
Table 6.5 Summary of structural indices for the three investors in the UK income tax system

Structural indices	Tenant / Landlords	Alternative Investors	Homeowner occupiers
	Pages 151, 166 & 181	Pages 146, 161 & 176	Pages 141, 156 & 171
Average Rate Progression (ARP)	1.47499E-07	1.58359E-07	1.65739E-07
Marginal Rate Progression (MRP)	1.16595E-07	1.28138E-07	1.32826E-07
Liability Progression (LP)	2.304814777	2.308145466	2.518312027

Appendix IV (Structural Progression Indices), various pages referenced.

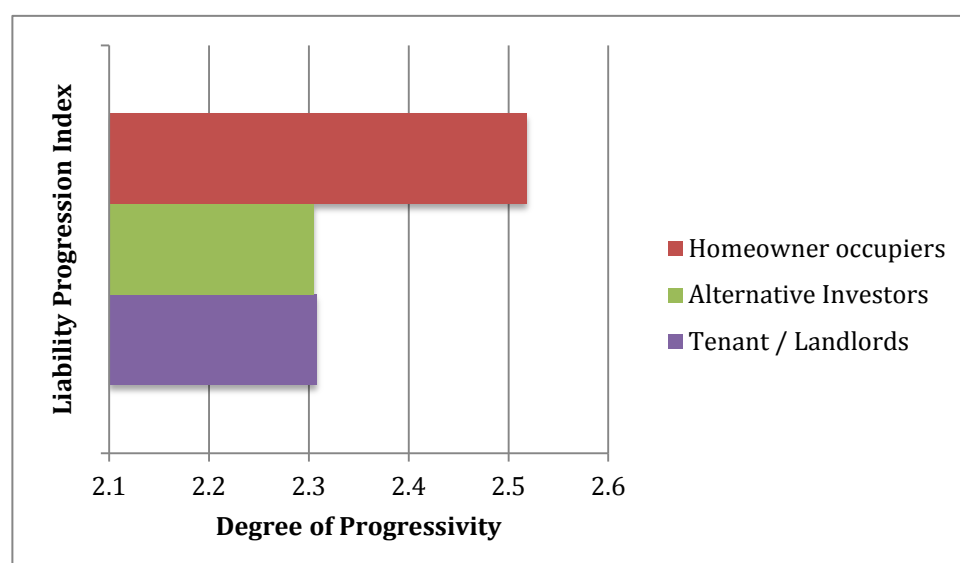
These results are reflected in Figures 6.5 and 6.6, which depict the degrees of progressivity for all three investors under the three structural indices.

Figure 6.5 Degrees of progressivity of the UK income tax system for all three investors as determined by the average and marginal rate progression indices



Appendix III (Chapter 6 Figures), page 125.

Figure 6.6 Degrees of progressivity of the UK income tax system for all three investors as determined by the liability progression index



Appendix III (Chapter 6 Figures), page 126.

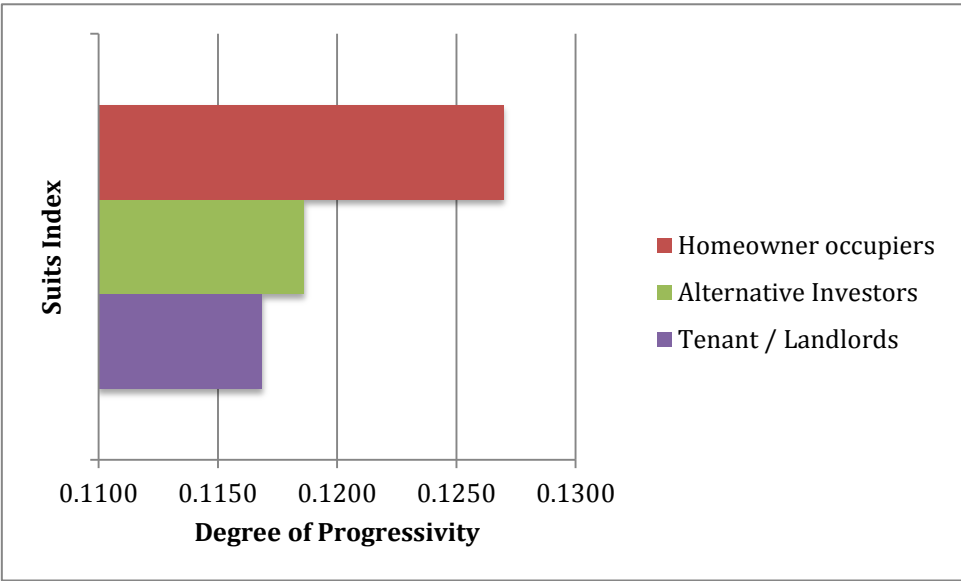
Two conclusions may be drawn from this analysis. First, the recognition of rental income and losses decrease the progressivity of the income tax system overall. The reason for this is the fact that the rental income is reported as evenly split between spouses. The half of the rental income realised by the wage-earning spouse is taxed at the marginal income tax rates. The other half reported by the non-earning spouse will first be offset with the personal allowance and any residual income is taxed at the lower and/or basic rates. Hence the diluting effects on the average tax rates. The second conclusion being drawn from the order of progression is that the tax subsidies of homeowner occupiers increase the progressivity of the income tax system. This is due to the regressive distribution of the MIRAS benefit (i.e. MIRAS is worth less to the higher earners). These conclusions will be tested in Chapter 7 when neutrality effects are considered.

Comparisons of the annual S indices with regard to income taxes between the investors show the homeowner occupiers have a higher level of progression in the first half of the study due to the allowance of mortgage interest relief. It is an interesting observation that the provision for mortgage relief *improves* progressivity. The effect is due to the limitations placed on the level of indebtedness and the rate of tax relief. After the abolition of MIRAS, the levels of progression are equal (as the

tax liabilities are equal) for all three investors until the final eight years when the tenant / landlords deviate with lower levels of progression due to the recognition of net rental income.

The Suits indices determined by the twenty-year cumulative income and tax data are indeed positive confirming progressive taxation. Further, the order of progression is consistent with the structural indices in that the tenant / landlords register the least progression at 0.1169¹⁶⁶, followed by the alternative investors at 0.1186¹⁶⁷ and the greatest degree of progression is noted with the homeowner occupiers at 0.1270¹⁶⁸. Figure 6.7 reflect the degrees of progressivity of the UK income tax system as determined by the Suits index. The homeowners experience a far greater degree of progressivity according to this distributional index.

Figure 6.7 Degrees of progressivity of the UK income tax system for all three investors as determined by the suits index



Appendix III (Chapter 6 Figures), page 126.

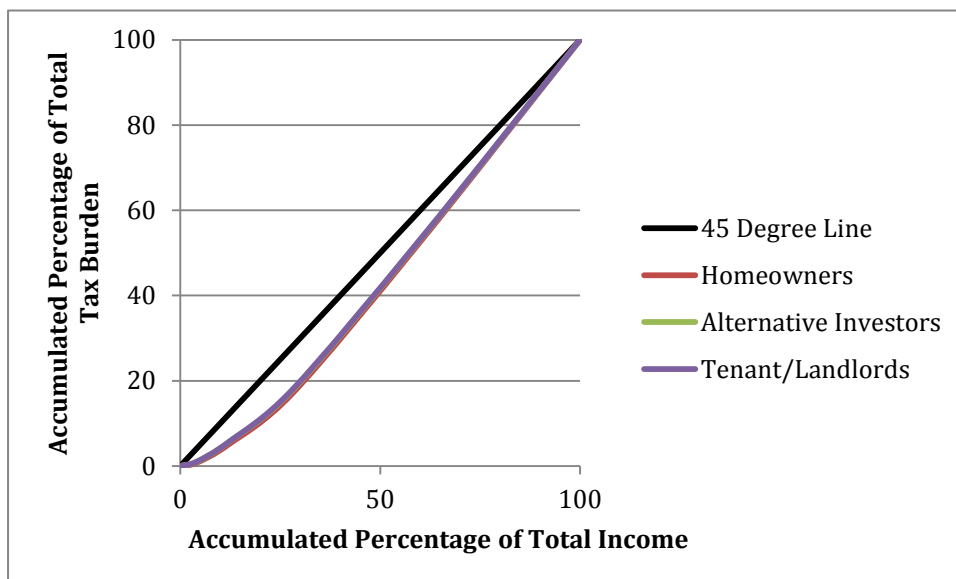
The closeness of the progression of the three investors makes it difficult to distinguish one from the other when the S curves are plotted. Nevertheless they are all represented in the graph within Figure 6.8.

¹⁶⁶ Appendix IV (Suits Indices), page 337.

¹⁶⁷ Appendix IV (Suits Indices), page 323.

¹⁶⁸ Appendix IV (Suits Indices), page 287.

Figure 6.8 Suits curves depicting the progression of the UK income taxes for all three investors



Appendix III (Chapter 6 Figures), page 126.

As is reflected in the three S curves depicted in Figure 6.8, a greater degree of bowing occurs at the lower ends of the axes. This is indicative of a greater degree of progressivity occurring at the lower levels of income and investment (i.e. UK-½ and UK-1). As is predictable, progression declines going up the income scale and this can be detected by the closer proximity of the S curves with the 45-degree line at the higher ends of the axes.

United States

The US federal income tax system is a progressive tax system with at least three levels of tax rates noted during the period studied. In addition to the varied tax rates, personal exemptions and deductions contribute to the degree of progressivity. Table 6.6 shows the cumulative average income tax rates for the US case families studied. As consistent with the two indications of progressivity, the average tax rates rise with income and fall below the respective marginal tax rates.

Table 6.6 Cumulative (1990 - 2009) average and marginal tax rates on US income taxes

	Homeowner occupiers	Tenant / Landlords	Alternative investors	Respective MTR range
	Pages 63-67	Pages 99-103	Pages 75-79	
1/2	0.6%	0.4%	0.6%	10%-15%
1	7.0%	6.9%	7.1%	15%
2	11.4%	12.9%	13.1%	25%-28%
4	17.4%	20.5%	20.8%	28%-33%
5	19.3%	23.5%	23.3%	31%-36%

[Appendix II \(Summaries of Specific and Overall Taxes\)](#), various pages referenced.

The average rate progression indices calculated on the data simulated for all three types of US investors consistently indicate a progressive income tax system with respect to positive indices. The greatest rate change in the progression of annual income taxation as detected by the ARP indices is between the two lowest levels of income and investment (US-½ and US-1), regardless of the type of investor. Thereafter the degrees of progression diminish at each subsequent level of income and investment. The initial analysis of the ARP indices here leads one to conclude the US income tax system is indeed progressive, but becomes less so at higher levels of income and investment as observed in the UK income tax analysis.

The marginal rate progression indices are consistent with regard to classification of progressive characteristics with the exception of the indices for four years (1992-1995) for the lower three levels of income and investment homeowners (US-H½, US-H1 and US-H2) where regressivity is recorded. This is due to the very low tax obligations of the lowest tiered homeowners. When tested further with the alternative expression of MRP, using the actual marginal tax rates in the numerator, the results are indeed positive and progressive in conclusion. Further, the MRP indices measuring the degree of progression between the extremes all indicate positive (progressive) results.

In comparing the MRP indices for the homeowner occupiers and the alternative investors, the degree of progression is greatest for the homeowners at the lower three levels of income and investment. The greatest degree of progression with respect to the tenant / landlords exists in the middle range until 1998 when it bears the same results as the homeowner occupiers and alternative investors. The progression

determined by the higher three levels of income and investment are consistent between the tenant / landlords and alternative investor in that both record lesser progressivity pre-1999 and greater progressivity post-1998. The homeowner occupiers record lesser progressivity pre-2005 and from then on, greater progressivity.

The Liability Progression indices measuring the degrees of progression between individual case families and between the extremes consistently indicate progression.

When the progression indices determined by the cumulative income and tax data of the homeowners are compared with those calculated for the alternative investors and tenant / landlords the results are consistent in that the greatest levels of progression within the income tax system are observed with the tenant / landlords, followed by the alternative investors and finally, the homeowner occupiers show the least progression of the three. Two conclusions may be drawn from this analysis. First, the recognition of rental income and losses increase the progressivity of the income tax system overall by increasing the average tax rates when income is recognised and reducing average tax rates for the lower tiers when losses are allowed. Second, the tax subsidies of homeowner occupiers decrease the progressivity of the income tax system. These conclusions will be tested in Chapter 7 when neutrality effects are considered. The structural indices calculated on the cumulative income and tax obligations for the three US investors with respect to the income tax system are summarised in Table 6.7 in order of progression, from least (H) to greatest (TL).

Table 6.7 Summary of structural indices for the three investors in the US income tax system

Structural indices	Homeowner occupiers	Alternative Investors	Tenant / Landlords
	Pages 187, 202 & 217	Pages 192, 207 & 222	Pages 197, 212 & 227
Average Rate Progression (ARP)	5.15837E-08	6.25914E-08	6.51215E-08
Marginal Rate Progression (MRP)	3.94528E-08	5.30653E-08	5.73775E-08
Liability Progression (LP)	3.199383661	3.852971039	3.98326883

These results are reflected in Figures 6.9 and 6.10, which depict the degrees of progressivity for all three investors under the three structural indices.

Figure 6.9 Degrees of progressivity of the US income tax system for all three investors as determined by the average and marginal rate progression indices

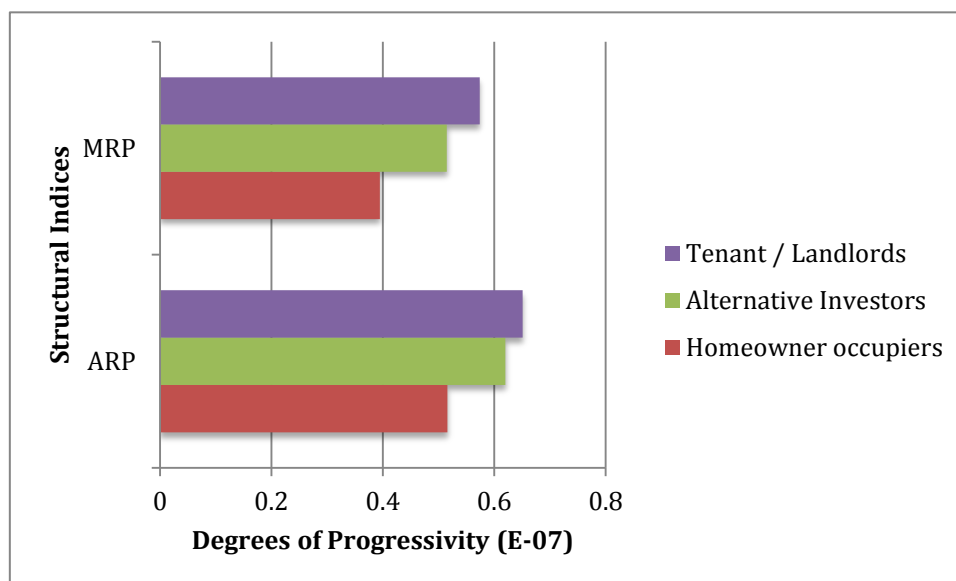
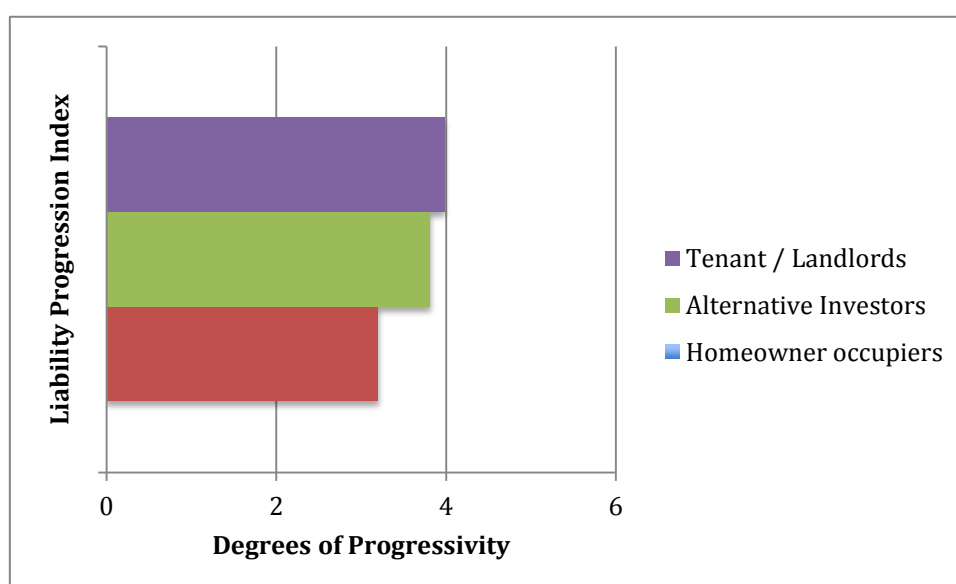
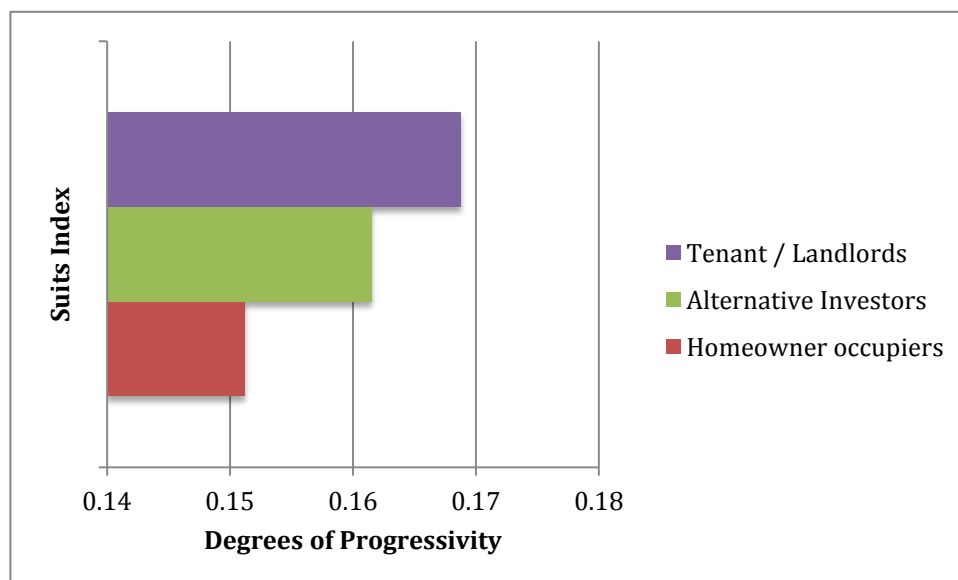


Figure 6.10 Degrees of progressivity of the US income tax system for all three investors as determined by the liability progression index



The Suits indices calculated on an annual basis all confirm the progressive characterization of the US income tax system. Further, the results also consistently indicated the US income tax systems of homeowner occupiers are the least progressive, followed by the alternative investors and then the tenant / landlords with the greatest degree of progressivity. Their respective Suits indices based on the cumulative income and tax obligations simulated are 0.1512 (H)¹⁶⁹, 0.1626 (A)¹⁷⁰ and 0.1687 (TL)¹⁷¹. Figure 6.11 reflects the degrees of progressivity of the US income tax system as determined by the Suits index for all three investors. The homeowner occupiers experience far less progressivity according to this analysis.

Figure 6.11 Degrees of progressivity of the US income tax system for all three investors as determined by the Suits index



Appendix III (Chapter 6 Figures), page 127.

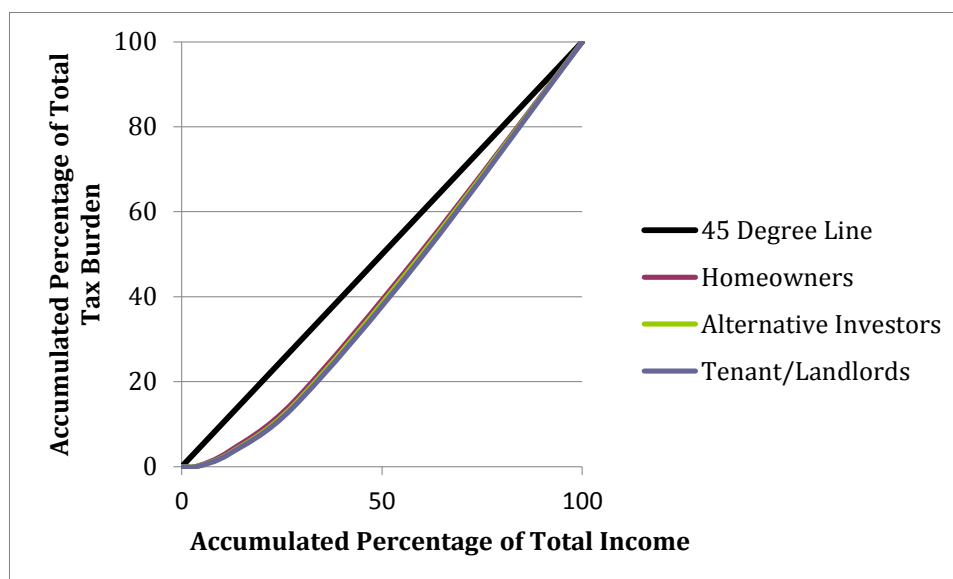
The resulting S curves are similar to those depicted early for the UK income tax system in that the closeness in progressivity makes it difficult to distinguish a specific type of investor. Regardless, Figure 6.12 shows the S curves for all three investors, the bowing below the 45-degree line clearly representing the progressiveness of the US income tax system.

¹⁶⁹ Appendix IV (Suits Indices), page 351.

¹⁷⁰ Appendix IV (Suits Indices), page 377.

¹⁷¹ Appendix IV (Suits Indices), page 391.

Figure 6.12 Suits curves depicting the progression of the US income taxes for all three investors



Appendix III (Chapter 6 Figures), page 128.

Once again, the income tax system is seen to be more progressive at the lower levels of income and investment than at the higher levels. This is reflected in a greater bowing of the S curves at the lower ends of the axes. As explained by Musgrave and Thin (1948), progression of an income tax system tends to diminish going up the income scale.

Conclusions, comparisons and contrasting results

Both the UK and the US income tax systems are undoubtedly progressive given multiple rates of tax, personal allowances, various deductions, exemptions and credits.

The elements that affect the taxation of homeowner occupiers (i.e. the mortgage interest relief and the non-taxation of imputed rental income) have contrasting results under close examination. The UK homeowner occupiers experience a greater level of progressivity when compared to the alternative investors and the tenant / landlords whereas the US homeowner occupiers experience a lesser degree of progressivity when compared with their country-counterparts. The reasons for these differences rest with the structure of the allowances for mortgage interest relief (and real estate tax relief specifically in the US).

With regard to mortgage interest relief, the UK allowance is limited in eligible debt and the rate of relief. In the US the allowances applicable to the case families are not restricted in terms of eligibility or rate of relief, but do not benefit the lower tiers of homeowners. The effect is a regressive allowance in the UK and a progressive allowance in the US. This effect is explored in greater detail in Chapter 7 (Equity effects from increased neutrality and a decomposition of subsidies).

With regard to the absence of an imputed rental income in the income tax system, one must first examine the progression differences between the alternative investors and the tenant / landlords in both countries. The tenant / landlords in the UK experience a less progressive income tax system as compared with the alternative investors. This is the result of the tenant / landlords being able to lower their average rate of tax by splitting the rental income between the two spouses and utilising the personal allowance and lower tax bands of the non-working spouse. The US tenant / landlords on a whole, experience a greater degree of progressivity as a result of consistently higher average tax rates from income recognition at all income levels and lower average tax rates for the lower tiered tenant / landlords when losses are allowed. The effect on homeowner occupiers of not realising imputed rental income (and losses in the US), which are consistent with the respective countries' policies on residential rental activities, is greater progression in the UK income tax system and less progression in the US income tax system.

6.1.4. Capital gains taxes

The UK capital gains tax system taxes nominal gains at a reduced rate of eighteen per cent since April 2008. The US capital gains tax system also taxes nominal gains at reduced rates of zero, fifteen, twenty-five and twenty-eight per cent, depending on the type of gain subjected to tax and the level of taxable income. The UK offers a generous annual exemption to all individual taxpayers, thus introducing a nil rate band into the tax system making it a progressive tax system. The US capital gains tax system offers an exemption to taxpayers with taxable income below a set threshold, also introducing a level of progressivity into the system.

Homeowner occupiers in the UK enjoy a complete exemption from capital gains taxation with regard to the sale of a qualified principal residence. The majority of all

homeowner occupiers in the US are able to exclude their entire capital gains from taxation given a very generous allowance. Given the levels of income and investment, the US case families in this study are all able to avoid capital gains taxation, thus making them effectively exempt.

Investors in rental real estate in the UK are taxed on their realised capital gains at the time of disposition, without regard for any suspended rental losses. By contrast, the US allows all unutilised losses of the disposed property to offset general and capital income at the time of disposition. In addition to the capital gain, ordinary income is recognisable and taxable by US property investors equal to the amount of depreciation claimed under the rental activity.

UK investors in financial securities are taxable on their realised nominal capital gains, net of the annual exemption. The US alternative investors are also taxable on their realised nominal capital gains, when the threshold is surpassed.

United Kingdom

The capital gains realised by the homeowner occupiers are fully exempt from taxation by legislative provision. The alternative investors in the study are able to legally avoid capital gains taxation through tax planning.¹⁷² Table 6.8 therefore correctly indicates nil average tax rates for both homeowner occupiers and alternative investors.

The two tax bands (nil and 18%) indicate a degree of progressivity in the UK capital gains tax system. Once again, the tell-tale signs as depicted for the tenant / landlords in Table 6.8 are a rise in the average tax rates as the income rises and the average tax rates being less than the marginal tax rate of 18%.

¹⁷² The reader is referred to Section 5.1.4 of Chapter 5 (Horizontal Equity) for a complete explanation and example of this tax avoidance technique.

Table 6.8 UK average tax rates on capital gains in the year of disposition (2009/10)

Income Multiple	Homeowner Occupiers and Alternative Investors	Tenant / Landlords ¹⁷³
1/2	0.0%	0.0%
1	0.0%	4.9%
2	0.0%	11.9%
4	0.0%	15.3%
5	0.0%	15.9%

As expected, the ARP indices calculated on the capital gains and corresponding taxation for the tenant / landlord are positive, confirmation of a progressive tax system. The greatest degree of progressivity is at the lowest levels with diminishing degrees going up the income scale.

The question is how one would define a nil rate of taxation applicable at all levels of income investment. Is the single rate of tax (0%) indicative of a proportional tax system (e.g. the rate neither rises nor falls with income)? Or would it be more accurate to identify such a tax system as regressive as the nil-tax (£0) stays constant as income rises? This would shed light on the qualitative characteristics of the capital gains tax system with regard to the UK homeowners and the alternative investors.

With regard to the homeowners, as their investment is exempt from taxation, there is no system of taxation on which to judge progressivity. It is illogical to assume a nil rate of tax; there is no tax liability as there is no taxable income. All homeowners enjoy an equal benefit from the exclusion and it may be argued that the wealthier taxpayers benefit more (i.e. they have a greater ability to realise a greater tax exempt gain). But the fact remains that the author cannot call this system of taxation proportional or regressive as there is no tax base from which to judge. That said, the absence of tax on capital gains for the homeowner occupiers would affect their overall degree of progressivity of the tax system comprised of the four aggregated specific taxes. This is addressed in the following section on *overall tax obligations*.

The difference between the homeowners and the alternative investors in this study is that while the homeowners are exempt, the alternative investors are subject to capital

¹⁷³ The reader is referred to Table 5.23 on page 200 for this detail.

gains taxation but are able to reduce their taxable incomes to zero through careful tax planning as is demonstrated in Tables 5.11 and 5.12 in the preceding chapter. The key tax-planning tool is the use of the available annual exemption. In this situation, the system of taxation is not a nil-rate, but a nil-liability through relief. Therefore, it is arguable that the annual exemption introduces an element of regressivity into the system as taxpayers enjoy the relief at marginal rates. In support of this position, when one pence is substituted for the nil liabilities of the UK case families within this study, the average tax rates decrease with rising income; an indication of a regressive tax system. It must be acknowledged however, that a minority of wealthy taxpayers may not always be able to completely avoid capital gains taxation. Any residual gains in excess of the annual exemptions are taxed at 18%. This being the case, the capital gains tax system for alternative investors is indeed progressive (eventually). For this study however, the regressivity of the capital gains tax system for the majority of UK alternatively invested taxpayers is acknowledged.

The average rate progression calculations would lead one to conclude the UK capital gains tax system is a proportional one with regard to both homeowners and alternative investors given zero tax liabilities with rising incomes. The author would argue this is not the case for either scenario. It should be unclassified for the homeowners (i.e. it cannot be considered progressive, proportional or regressive) given their complete exemption from CGT. It should be recognised as regressive for the alternative investors, given the marginally rated relief. If the nil-tax liabilities are replaced by one pence tax liabilities for the alternative investors, Average Rate Progression indices would be calculable and indicative of regressivity. The regression diminishes moving up the income scale.

The tenant / landlords liabilities are confirmed to be progressive by the liability progression index calculations. Further, the levels of progression diminish at each successive increase in levels of income and investment, consistent with the findings for average rate progression. The summary of all three structural indices relevant to the tenant / landlord is provided in Table 6.9.

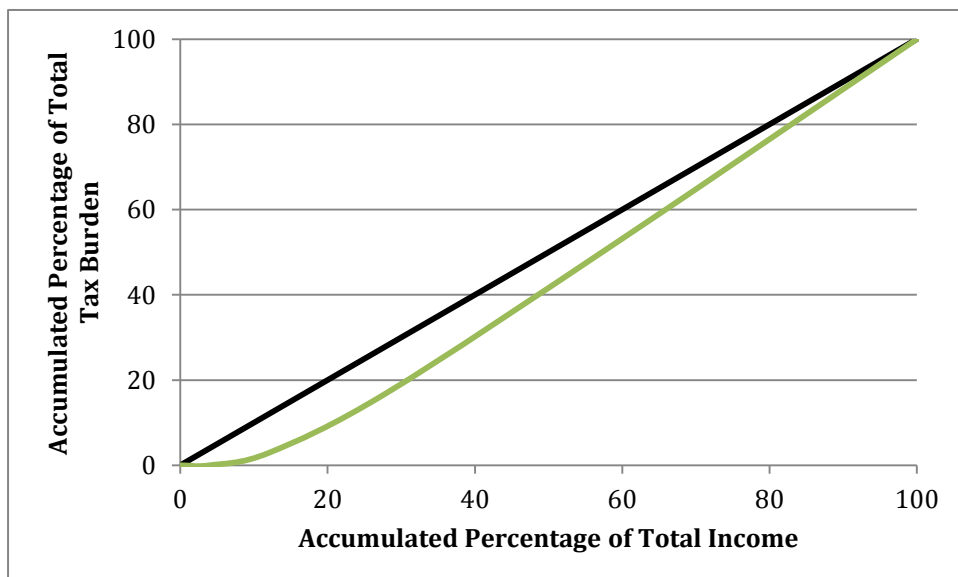
Table 6.9 Summary of structural indices for the tenant / landlord in the UK capital gains tax system

<u>Structural indices</u>	<u>Indices for Tenant / Landlords:</u>	<u>Progressivity Characteristic</u>
Pages 151, 166 & 181		
Average Rate Progression (ARP)	1.02987E-09	Progressive
Marginal Rate Progression (MRP)	2.55666E-07	Progressive
Liability Progression (LP)	3.792266269	Progressive

Appendix IV (Structural Progression Indices), various pages referenced.

The Suits index as determined by the capital gains taxation of the tenant / landlord is indeed positive at 0.1288, once more confirming progression. This is clearly represented in the S curve bowing below the 45-degree line in Figure 6.13.

Figure 6.13 Suits curve depicting the progression of the UK capital gains taxes for tenant / landlords



Appendix III (Chapter 6 Figures), page 128.

The greater degree of progression is detectable at the lower end of the income scale given the more pronounced bowing of the S curve at the lower ends of both axes.

United States

The capital gains realised by the homeowner occupiers in this study are fully exempt from taxation. In fact most US homeowners are exempt from capital gains taxation given the generous exemption provision of \$250,000 for the individual and \$500,000 for the married couple. However, once the threshold is surpassed, the capital gains rate of 15% applies, thus introducing a progressive tax system.

With regard to the tenant / landlords studied, the capital taxes incurred are progressive up to the middle level income and investment family (US-TL2) when the rate remains constant at 19.2%. While the headline capital gains tax suggests proportionality at a flat rate of fifteen per cent, the other element relevant to the tenant / landlords is the depreciation recapture and its 25% rate application. Table 6.10 clearly depicts this in its summary of average tax rates.

Alternative taxpayers of relatively low taxable income are able to avoid capital gains taxation by way of an exemption. This differs from the UK capital gains tax system where there exists a nil-rate band enjoyed by all individual taxpayers. In the US system, the exemption is not available to all; those that exceed the set income threshold are assessed capital gains tax at 15% in full. The US capital gains tax system therefore is characteristic of another form of slab-taxation.¹⁷⁴ Regardless of these differences, the UK and the US capital gains tax systems are indeed progressive systems of taxation in accordance with the literature (Norrengaard (1990), OECD (1990) and Rosen (2005)). The average tax rates for all types of investor are summarised in Table 6.10.

¹⁷⁴ The reader is referred back to Section 6.1.1 and Section 3.1.1 for a discussion on the UK stamp duty, another form of slab-tax.

Table 6.10 Average tax rates of US capital gains taxes in the year of disposition (2009)

	Homeowner Occupiers	Alternative Investors ¹⁷⁵	Tenant / Landlords ¹⁷⁶
1/2	0.0%	0.0%	4.9%
1	0.0%	0.0%	13.5%
2	0.0%	15.0%	19.2%
4	0.0%	15.0%	19.2%
5	0.0%	15.0%	19.2%

The ARP indices calculated for the tenant / landlords' indicate progressivity at the two lower steps followed by proportionality. The overall ARP, the index using the extreme data (US-TL $\frac{1}{2}$ and US-TL5) to measure the overall degree of progressivity is positive (2.44822E-07)¹⁷⁷, indicating progression.

With regard to the alternative investors, the ARP indices indicate proportionality followed by progressivity and ending with proportionality again. The overall ARP confirms a progressive tax system. The LP indices have the same results and conclusions as the ARP indices with regard to the tenant / landlords: progressivity followed by proportionality with an overall progressive result (1.528060495)¹⁷⁸. As the two lower tiered alternative investors have nil capital gains tax liabilities, the LP equations involving them are flawed. The higher tiered alternative investors with positive tax liabilities yield LP indices equal to 1, indicative of a proportional tax system. These results are dismissed in lieu of the average rate progression indices.

The Suits indices for alternative investors and tenant / landlords yield positive results, 0.1200 and 0.0514, respectively, indicating the systems are progressive, with the greatest degree of progression resting with the alternative investors. The S curves for the alternative investors and tenant / landlords are represented in Figure 6.14.

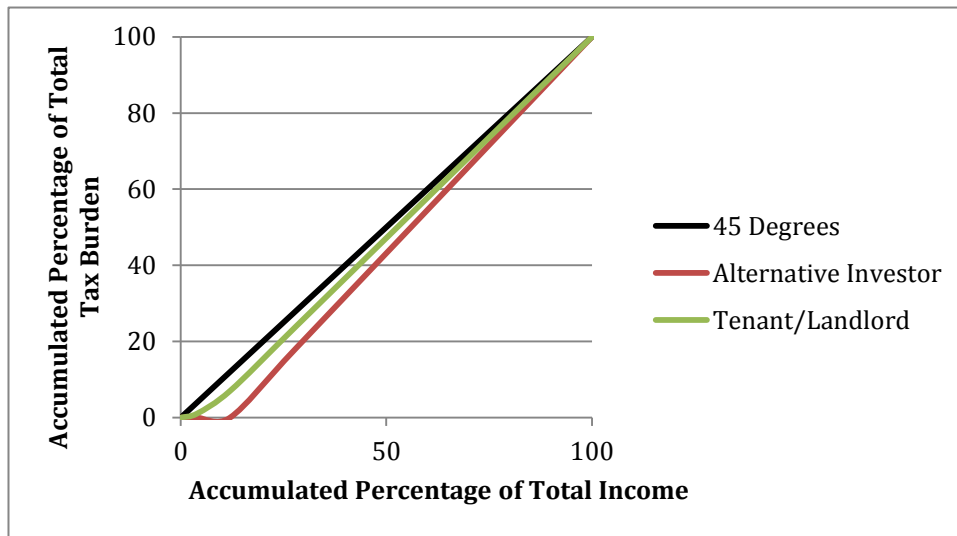
¹⁷⁵ The reader is referred to Table 5.24 on page 201 for this detail.

¹⁷⁶ The reader is referred to Table 5.24 on page 201 for this detail.

¹⁷⁷ The reader is referred to Appendix IV (Structural Progression Indices), page 197.

¹⁷⁸ The reader is referred to Appendix IV (Structural Progression Indices), page 227.

Figure 6.14 Suits curves depicting the progression of the US capital gains taxes for alternative investors and tenant / landlords



Appendix III (Chapter 6 Figures), page 129.

Once again, progression resides in the lower levels of income and investment as is discernible from the bowing of the S curves at the lower ends of the two axes.

Conclusions, comparisons and contrasting results

The homeowner occupiers in the UK enjoy the complete exemption of their qualified principal residence from capital gains taxation. The majority US homeowner occupiers are able to avoid capital gains taxation given the generous exclusion provision of \$250,000 for individuals (\$500,000 for married couples). The levels of income and investment analysed herein do not surpass the taxable threshold. Therefore, all five US case families are effectively exempt from capital gains taxation. Despite the similar outcome in that all homeowner occupiers studied have nil tax liabilities, the classification of the respective tax systems vary. The UK capital gains tax system cannot be classified as progressive, proportional or regressive as there is no tax base on which to pass judgement. Qualified gains are completely exempt, regardless of income level. The US capital gains tax system will in fact tax gains in excess of the given threshold at 15%, thereby deeming the system progressive.

The tenant / landlords of the UK and the US are subjected to capital gains taxation under the respective tax systems. Nominal gains are taxed in both countries. The UK provides for an annual exemption for all individuals whereas the US provides for an exemption only for those taxpayers falling below a set income threshold. In both situations, despite the differences in exemption availability, both capital gains tax systems are progressive given the two respective rates of taxation. The UK will not allow the recognition of unutilised losses in the year of disposition whereas the US will. The UK is very strict in that suspended rental losses may only offset future rental gains generated by the same property. Therefore, if a property is disposed of before the losses could be utilised, the suspended losses are lost.¹⁷⁹ The US allows all suspended losses to be recognised against ordinary income (first) and capital gains (second) in the year of disposition. A further difference between the two countries with respect to the tenant / landlords is with regard to depreciation. The UK does not allow for a capital allowance on unfurnished rental real estate whereas the US allows for a modified accelerated depreciation on the property, excluding land. At the time of the disposition, the capital gain is adjusted by the associated accumulated depreciation, which is in turn is taxed at the lower of the ordinary income tax rates or 25 per cent. The higher tiered homeowner occupiers (i.e. US-H2, US-H4 and US-H5) yield average capital gains tax rates of 19.2%¹⁸⁰, given the interplay between the 15% capital gains tax rate on the adjusted nominal capital gains and the 25% ordinary tax rate in the accumulated depreciation recaptured at disposition. When the progression indices of the two countries are compared, the Average Rate Progression index indicates greater progression in the US capital gains tax system for tenant / landlords. Contrary to this, Liability Progression index and the Suits index indicates greater progression for the same in the UK.

The nominal capital gains of alternative investors are subjected to capital gains taxation in both countries, in theory. In reality, most UK alternative investors are able to structure their tax affairs in such a way as to entirely avoid capital gains taxation. This is with regard to the utilization of the generous annual exemption available to individual taxpayers (i.e. £10,100 in 2010/11). Married couples may split the capital gains realised and thereby enjoy gains up to £20,200, free from

¹⁷⁹ The reader is referred to Section 3.1.2 of Chapter 3 (Country Summaries) for a full explanation of this feature of the UK property tax system.

¹⁸⁰ The reader is referred to Table 6.10 on page 272 for this information.

capital gains tax in the UK. Regardless of the fact that the five UK case families simulated in the study are able to entirely avoid capital gains taxation, two rates of tax exist in the UK (i.e. 0% and 18%), thus deeming the system progressive. The US alternative investors are also subject to a progressive capital gains tax system in that taxpayers falling below the threshold are exempt from such taxation while those exceeding the threshold bear tax at a 15% rate. Given the data generated by micro-simulation, the US has a more progressive capital gains tax system with regard to alternative investors, and may therefore be considered more vertically equitable.

6.1.5. Overall tax obligations

The progressivity of the overall tax systems relative to this research, which are comprised of the respective acquisition, property, income and capital gains taxes as simulated, requires careful consideration. It cannot be represented by the simple sum of the specific average tax rates. Suits established in his seminal work “the index for a system of two or more taxes is the weighted average of the indices for the individual taxes, with respective average tax rates as weights.” (Suits, 1977, p751) The weighting is based on average tax rates as determined by comprehensive income. The *modified* average tax rate required is discussed thoroughly in Section 4.6.2 of Chapter 4 (Methodology). The Suits indices determined by the cumulative income and specific tax burdens in the preceding sections of this chapter are multiplied by the weighted average tax rates to yield the *extended Suits indices*. These extensions are added together to yield the overall Suits indices for both countries for the twenty-year period studied. This section reports the results of the extended S indices measuring the progressivity of the overall tax obligations in the UK and the US, taking into account the four specific taxes analysed. The results are country specific and on a cumulative (whole study) basis. Annual results cannot capture all four taxes in any one-year, hence the need for cumulative examination. The cumulative results are used for within country comparisons (i.e. the overall progressivity of homeowner occupiers are compared with the overall progressivity of alternative investors and tenant / landlords) and for cross-country comparisons (i.e. the overall progressivity of the US homeowner occupiers is compared with the overall progressivity of the UK homeowner occupiers). This special feature of the Suits index is applied to the structural indices to ascertain whether or not such an

application is possible and informative. Like the extended Suits index, the ARP, MRP and LP indices as determined on cumulative income and specific tax data are weighted and added together to yield overall structural indices.

United Kingdom

The Suits index determining the overall progressivity of the UK tax system for the homeowner occupiers is based on the relationship of the average tax rates of the specific taxes as listed in Table 6.11 to a comprehensive cumulative income of £4,996,210. The comprehensive cumulative income is the sum of the twenty years of income totalling £4,567,963 and the gains realised on disposition of £428,247 for all five case families. Table 6.11 reflects each of these computational steps yielding the overall progression index of 0.1071 for UK homeowner occupiers.

Table 6.11 The Suits index determining the overall progressivity of the UK tax system for homeowner occupiers

	Acquisition Taxes (AT)	Property Taxes (PT)	Income Taxes (IT)	Capital Gains Taxes (CGT)	Overall Tax Obligations
Cumulative Tax Obligations	£5,100	£78,815	£1,237,732	£0	£1,321,647
Overall ATR	0.1%	1.58%	24.77%	0.00%	26.45%
Weights	0.4%	6.0%	93.6%	0.0%	100.0%
Tax-Specific Suits Indices	0.0400 ¹⁸¹	-0.2004 ¹⁸²	0.1270 ¹⁸³	0.0000	
Extended Suits Indices	0.0001	-0.0119	0.1189	0.0000	0.1071

Appendix IV (Overall Measures of Progressivity), page 229.

As with the specific Suits indices, an S curve may be plotted to reflect the overall progression of the UK tax system. This is done by plotting the accumulated percentage of the total overall tax burden against the accumulated percentage of the total comprehensive income. Figure 6.15 reflects the four specific S curves and the S curve representing the progression of the overall tax system as comprised of these four specific tax systems. As would be expected given the weightings, the overall

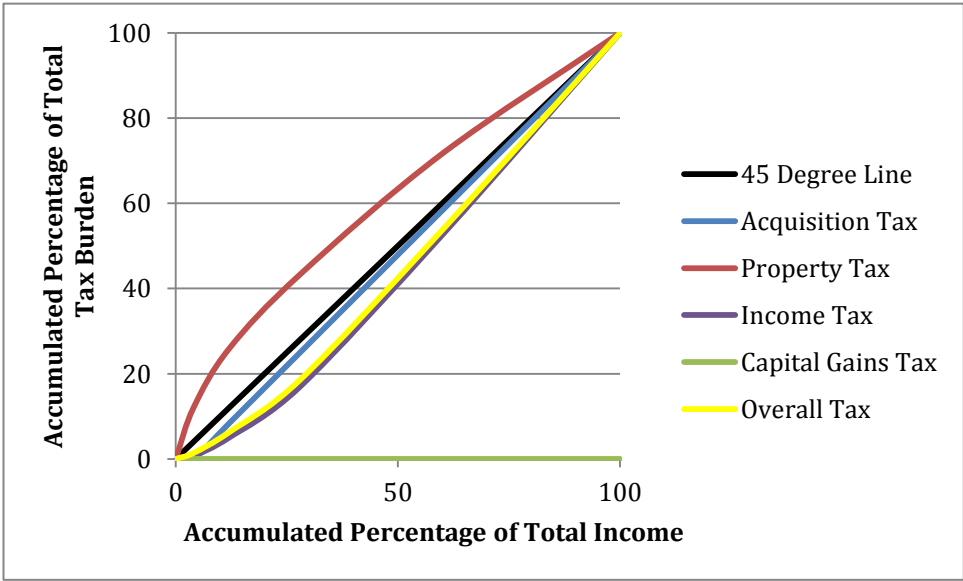
¹⁸¹ The reader is referred to page 243 of this chapter.

¹⁸² The reader is referred to page 248 of this chapter.

¹⁸³ The reader is referred to page 259 of this chapter.

progression curve closely follows the S curve applicable to the income tax system. The overall tax S curve rests between the income tax S curve and the 45-degree line, indicating slightly less progression to the pure income tax measure. Again, this is to be expected given the influence of the regressive property tax, moderately progressive acquisition tax and non-existent capital gains tax.

Figure 6.15 Suits curves depicting the progression of the UK taxes for homeowner occupiers



Appendix III (Chapter 6 Figures), page 129.

The computation of the Suits index with respect for the tenant / landlords, measuring the overall progressivity of their tax system as simulated, is summarised in Table 6.12 on the next page. Their comprehensive cumulative income of £5,203,013 is comprised of £4,774,766 in income and £428,247 in capital gains. The overall progression as determined by the extended Suits index is indeed positive, measuring at 0.09976. This is slightly less progressive than the equivalent overall progression measurement for the homeowner occupiers (0.1071).

The S curves as determined by the four specific tax systems and the overall progression measurement relative to the UK tenant / landlords are reflected in Figure 6.16. Once again, the progression for the overall tax system closely follows that of the income tax system. Unlike the homeowner occupiers, the tenant / landlords have the progressivity of the capital gains tax system to influence the overall tax progressivity. The associated S curve of the capital gains tax system is relatively close in proximity of the income tax and overall tax systems, thus making the three S curves fairly indistinguishable, particularly higher up the income scale.

Table 6.12 The Suits index determining the overall progressivity of the UK tax system for tenant / landlords

	Acquisition Taxes (AT)	Property Taxes (PT)	Income Taxes (IT)	Capital Gains Taxes (CGT)	Overall Tax Obligations
Cumulative Tax Obligations	£5,100	£78,815	£1,301,991	£58,077	£1,443,983
Overall ATR	0.1%	1.51%	25.02%	1.12%	27.75%
Weights	0.4%	5.4%	90.2%	4.0%	100.0%
Tax-Specific Suits Indices	0.0400 ¹⁸⁴	-0.2004 ¹⁸⁵	0.1169 ¹⁸⁶	0.1288 ¹⁸⁷	
Extended Suits Indices	0.0001	-0.0109	0.1054	0.0052	0.09976

Appendix IV (Overall Measures of Progressivity), page 231.

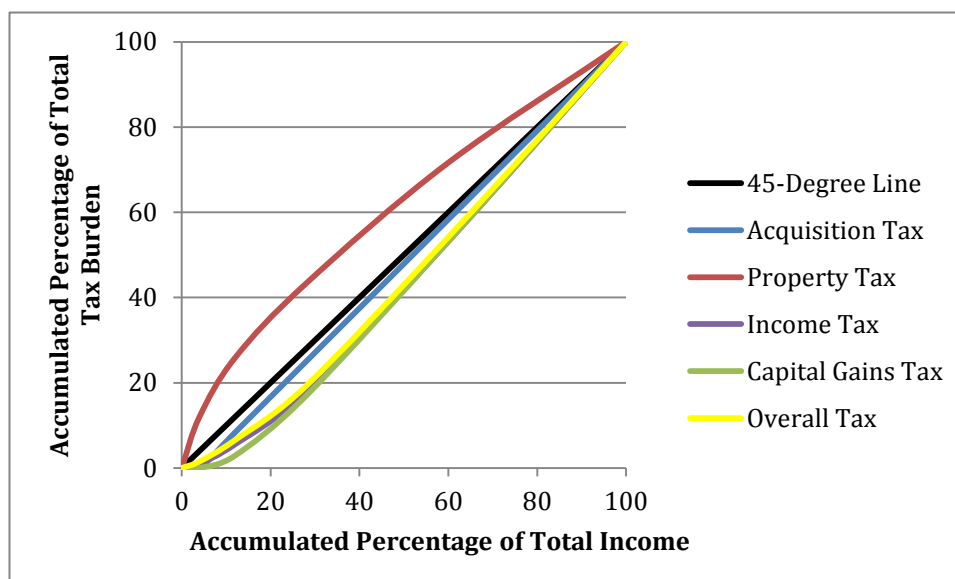
¹⁸⁴ The reader is referred to page 243 of this chapter.

¹⁸⁵ The reader is referred to page 248 of this chapter.

¹⁸⁶ The reader is referred to page 259 of this chapter.

¹⁸⁷ The reader is referred to page 270 of this chapter.

Figure 6.16 Suits curves depicting the progression of the UK taxes for tenant / landlords



Appendix III (Chapter 6 Figures), page 130.

Finally, the Suits index for the overall tax system relative to the alternative investors is determined in the same manner and reflected in Table 6.13. The comprehensive cumulative income of £4,734,633 is comprised of £4,567,964 in income and £166,669 in capital gains.

Table 6.13 The Suits index determining the overall progressivity of the UK tax system for alternative investors

	Acquisition Taxes (AT)	Property Taxes (PT)	Income Taxes (IT)	Capital Gains Taxes (CGT)	Overall Tax Obligations
Cumulative Tax Obligations	£3,001	£78,815	£1,262,192	£0	£1,344,008
Overall ATR	0.06%	1.66%	26.66%	0.00%	28.38%
Weights	0.2%	5.9%	93.9%	0.0%	100.0%
Tax-Specific Suits Indices	0.0000	-0.2004 ¹⁸⁸	0.1186 ¹⁸⁹	0.0000	
Extended Suits Indices	0.0000	-0.0117	0.1114	0.0000	0.09966

Appendix IV (Overall Measures of Progressivity), page 230.

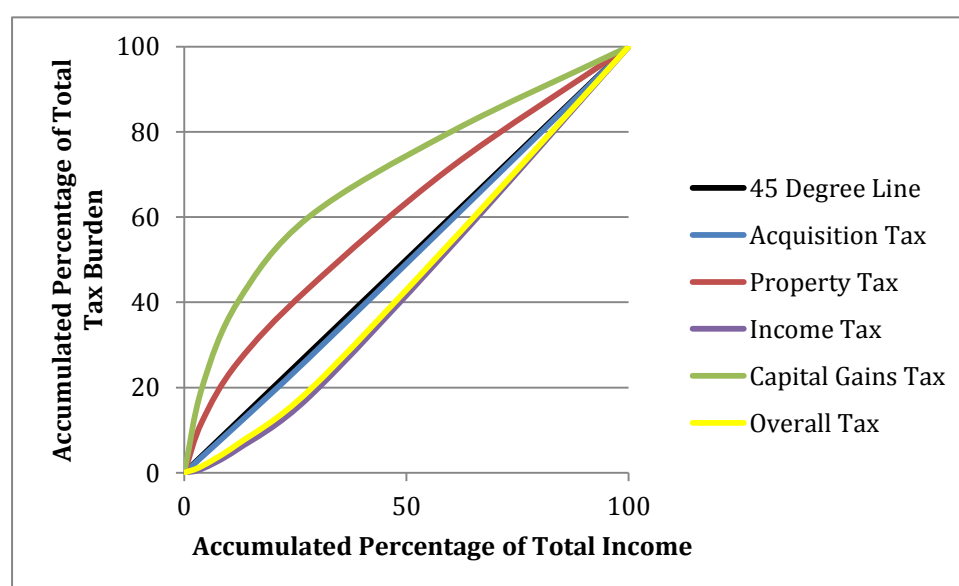
¹⁸⁸ The reader is referred to page 248 of this chapter.

¹⁸⁹ The reader is referred to page 259 of this chapter for this computation.

The overall progression as determined by the extended Suits index is indeed positive, measuring at 0.09966. This again is slightly less progressive than the equivalent overall progression measurement for the tenant / landlords (0.09976), indicating the overall tax system is the least progressive for the alternative investors.

The S curves for the four specific tax systems and the corresponding overall tax system are plotted in Figure 6.17. The reader is reminded that while the capital gains tax system is depicted as regressive herein, and indeed may be considered so for the majority of UK taxpayers, the system must be recognised as potentially progressive given the two rates of tax (i.e. 0% and 18%). Regardless, the system is depicted as regressive for purposes of this study. In spite of the regressive capital gains and property tax systems and the proportional acquisition tax system, the overall tax system once again closely follows the path of the income tax system given the respective weightings.

Figure 6.17 Suits curves depicting the progression of the UK taxes for alternative investors



Appendix III (Chapter 6 Figures), page 130

In summary, the Suits indices measuring the degree of progressivity of overall tax systems for the UK homeowner occupiers, the tenant / landlords and alternative investors are 0.1071, 0.09976 and 0.09966, respectively. As with the structural indices computed on the income tax data, the homeowner occupiers are deemed to

have the most progressive overall tax system of the three investors. The order of progression is inconsistent in that the tenant / landlords are deemed to have the least progressive under the structural indices as opposed to the alternative investors under the Suits index. This is not surprising, given the impact of the capital gains taxes on the weightings and therefore the extended indices.

Similar calculations for measuring the overall progressivity of the three investors are attempted using the structural indices. There are some inconsistencies with the results under Suits as well as among themselves.

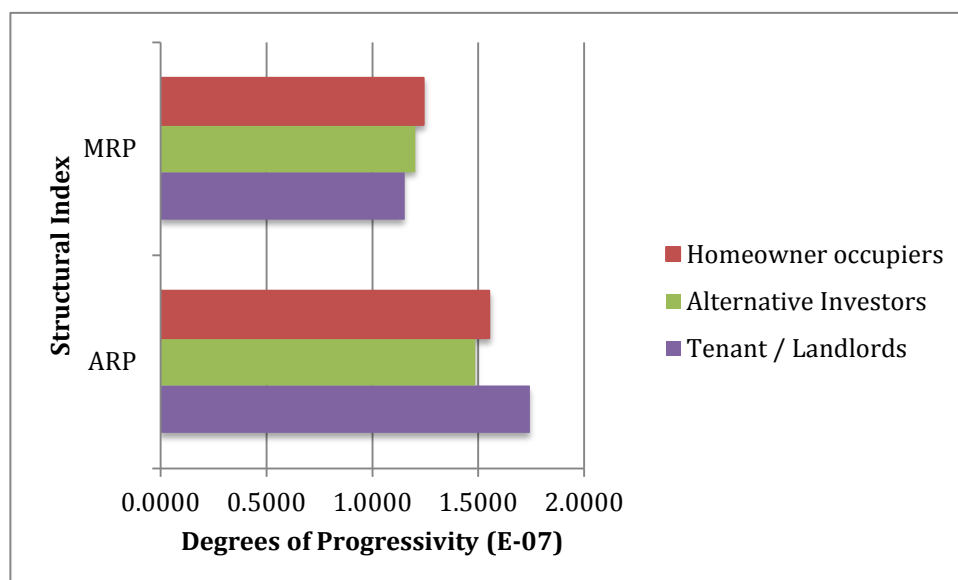
The homeowner occupiers rank as bearing the most progression with respect to the MRP and liability progression indices measuring the overall taxation. As with the Suits measure, liability progression would then suggest that the tenant / landlords bear the next highest level of progression with the alternative investors bearing the least. This is discernible in Figure 6.19. The MRP differs in that the order of progression for the alternative investors and the tenant / landlords are reversed as depicted in Figure 6.18. Interestingly, the average rate progression indices suggest the tenant / landlords bear the most progression, followed by the homeowner occupiers and the alternative investors. The numerical results are summarised in Table 6.14.

Table 6.14 Summary of structural indices measuring the degree of progression of the UK tax system.

Structural indices	Tenant / Landlords	Alternative Investors	Homeowner occupiers
Average Rate Progression (ARP)	1.74466E-07	1.48574E-07	1.55271E-07
Marginal Rate Progression (MRP)	1.1532E-07	1.20338E-07	1.24291E-07
Liability Progression (LP)	2.248537675	2.185241842	2.377907794

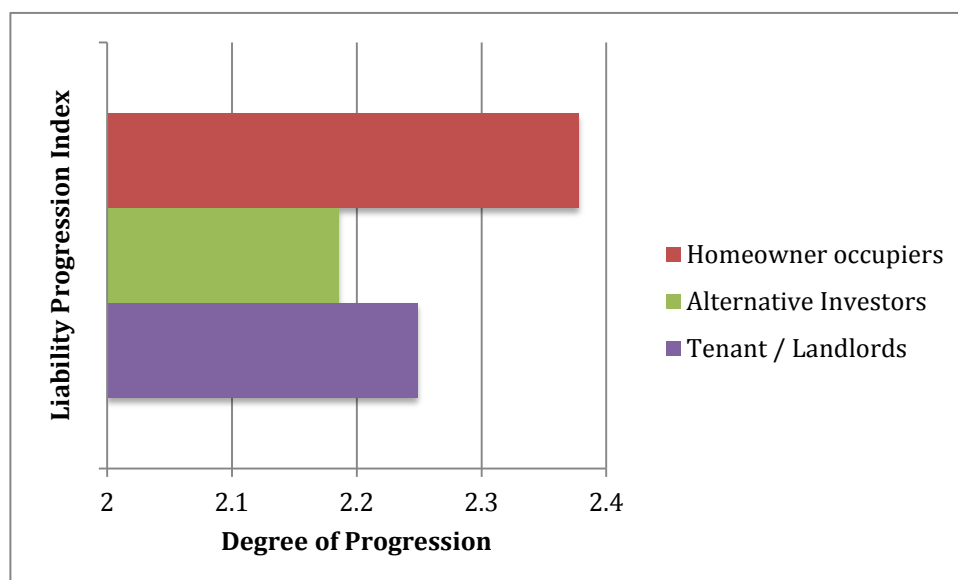
Appendix IV (Overall Measures of Progressivity), pages 231, 230 and 229, respectively.

Figure 6.18 Degrees of progressivity of the UK overall tax system for all three investors as determined by the ARP and MRP progression indices



Appendix III (Chapter 6 Figures), page 131.

Figure 6.19 Degree of progressivity of the UK overall tax system for all three investors as determined by the liability progression index



Appendix III (Chapter 6 Figures), page 131.

Judgement on the usefulness of this information is reserved until the US results are considered in the next section.

United States

The Suits index determining the overall progressivity of the US tax system for the homeowner occupiers is based on the relationship of the average tax rates of the specific taxes as listed in Table 6.15 to comprehensive cumulative income of \$11,021,052. The comprehensive cumulative income is the sum of the twenty years of income totalling \$10,076,390 and the gains realised on disposition of \$944,662 for all five case families. The weights are determined by the relationship of the specific average tax rates to the total of the four specific average tax rates. The Suits indices determined by the cumulative income and specific tax burdens in the preceding sections of this chapter are then multiplied by the weighted average tax rates to yield the *extended suits indices*. These extensions are added together to yield the overall Suits index for the twenty-year period studied. Table 6.15 reflects each of these computational steps yielding the overall progression index of 0.1260 for US homeowner occupiers.

Table 6.15 The Suits index determining the overall progressivity of the US tax system for homeowner occupiers

	Acquisition Taxes (AT)	Property Taxes (PT)	Income Taxes (IT)	Capital Gains Taxes (CGT)	Overall Tax Obligations
Cumulative Tax Obligations	\$5,859	\$314,427	\$1,583,055	\$0	\$1,903,341
Overall ATR	0.05%	2.85%	14.36%	0.00%	17.26%
Weights	0.3%	16.5%	83.2%	0.0%	100.0%
Tax-Specific Suits Indices	0.0000 ¹⁹⁰	0.0018 ¹⁹¹	0.1512 ¹⁹²	0.0000	
Extended Suits Indices	0.0000	0.0003	0.1257	0.0000	0.1260

Appendix IV (Overall Measures of Progressivity), page 233.

As with the specific Suits indices, an S curve may be plotted to reflect the overall progression of the US tax system. This is done by plotting the accumulated percentage of the total overall tax burden against the accumulated percentage of the

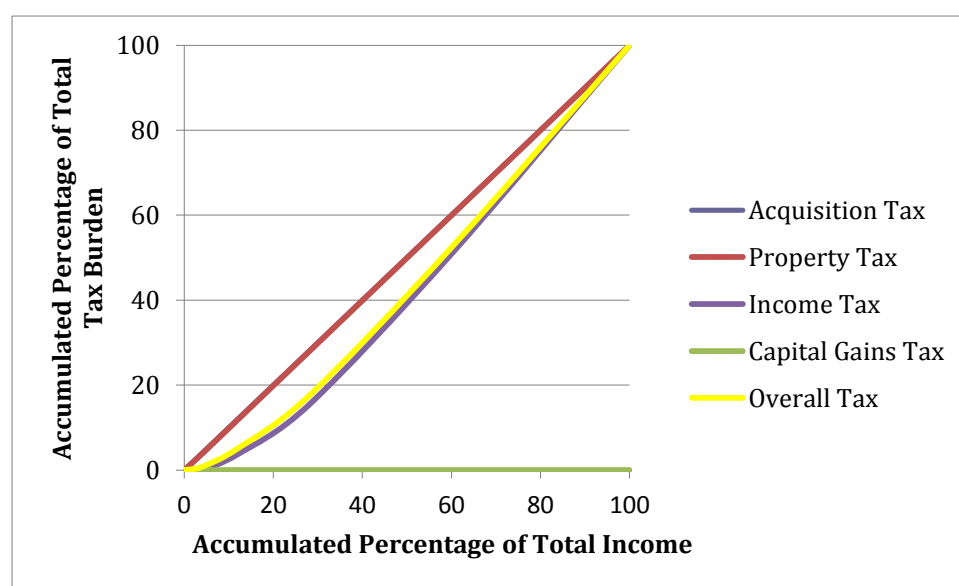
¹⁹⁰ The reader is referred to page 244 of this chapter.

¹⁹¹ The reader is referred to page 249 of this chapter.

¹⁹² The reader is referred to page 264 of this chapter.

total comprehensive income. Figure 6.20 reflects the four specific S curves and the S curve representing the progression of the overall tax system as comprised of these four specific tax systems. As would be expected given the weightings, the overall progression curve closely follows the S curve applicable to the income tax system. This is in spite of the proportional acquisition tax system, the nearly proportional (slightly progressive) property tax system and the effective exemption from the capital gains tax system by the homeowner occupiers.

Figure 6.20 Suits curves depicting the progression of the US taxes for homeowner occupiers



Appendix III (Chapter 6 Figures), page 131.

The computation of the Suits index with respect for the tenant / landlords, measuring the overall progressivity of their tax system as simulated, is summarised in Table 6.16 on the following page. These are based on a comprehensive cumulative income of \$11,498,177 whereas the income is \$9,874,540 and the gains are \$1,623,637.

The overall progression of the tenant / landlords is shown to be the more progressive than that of the homeowner occupiers, measuring at 0.1326. This is largely to do with the effect of the mortgage interest (and real estate tax relief) on the progressivity of the income tax system for homeowner occupiers. As the benefit of these deductions only accrues to the individuals higher up the income scale because of the standard deduction provision, the effect is a progressive benefit which has the

opposite (regressive) effect on the entire income tax system. This will be fully examined and explained in Chapter 7 (Equity effects from increased neutrality and a decomposition of subsidies). The other contributory factor in establishing greater progressivity for tenant / landlords is with regard to the capital gains tax system. The homeowner occupiers are not taxed on their realised capital gains whereas the tenant / landlords are progressively taxed on their nominal capital gains and associated depreciation recapture.

Table 6.16 The Suits index determining the overall progressivity of the US tax system for tenant / landlords

	Acquisition Taxes (AT)	Property Taxes (PT)	Income Taxes (IT)	Capital Gains Taxes (CGT)	Overall Tax Obligations
Cumulative Tax Obligations	\$5,859	\$315,016	\$1,837,350	\$294,750	\$2,452,975
Overall ATR	0.05%	2.74%	15.98%	2.56%	21.33%
Weights	0.2%	12.8%	75.0%	12.0%	100.0%
Tax-Specific Suits Indices	0.0000 ¹⁹³	0.0000 ¹⁹⁴	0.1687 ¹⁹⁵	0.0514 ¹⁹⁶	
Extended Suits Indices	0.0000	0.0000	0.1264	0.0062	0.1326

Appendix IV (Overall Measures of Progressivity), page 235.

The four specific taxes represented by S curves and the overall progression S curve are depicted in Figure 6.21 on the following page. Again, the progression of the overall tax system as comprised of the four tax systems is closely associated with the progression of the income tax system. This is in spite of the diluted weighting of the income tax as a result of the relevant capital gains tax data. The slight separation between the two S curves is due to this dilution.

The acquisition and property tax systems are perfectly proportional with regard to the tenant / landlords. The associated S curves therefore rest on the 45-degree line, which, in this situation, obscures the acquisition tax S curve and the 45-degree line from view.

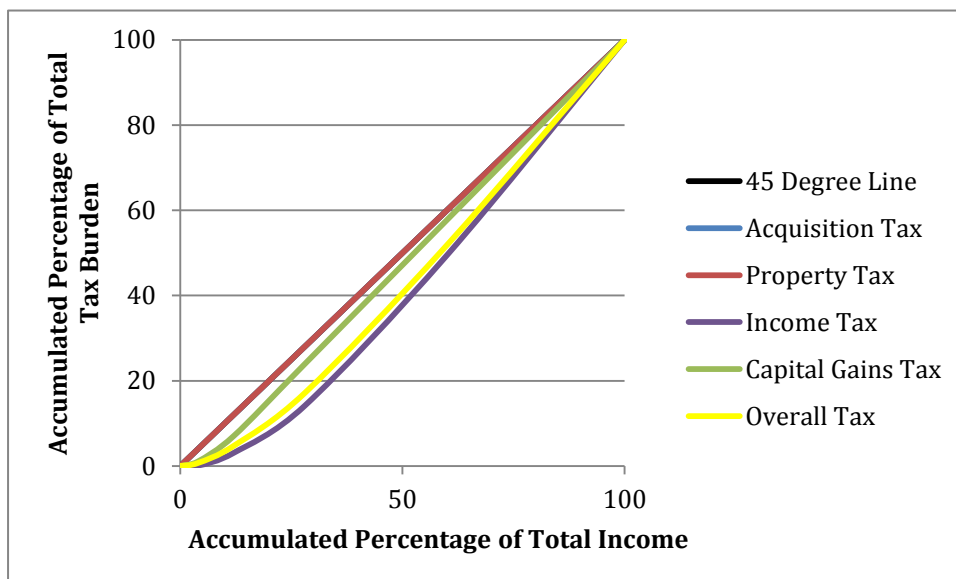
¹⁹³ The reader is referred to page 244 of this chapter.

¹⁹⁴ The reader is referred to page 249 of this chapter.

¹⁹⁵ The reader is referred to page 264 of this chapter.

¹⁹⁶ The reader is referred to page 272 of this chapter.

Figure 6.21 Suits curves depicting the progression of the US taxes for tenant / landlords



Appendix III (Chapter 6 Figures), page 132.

Finally, the Suits index for the overall tax system relative to the alternative investors is determined in the same manner. The comprehensive cumulative income of \$10,402,730 is comprised of \$10,076,390 in income and \$326,340 in capital gains. The computational steps in determining the *extended Suits indices* and the overall progression index of 0.1389 are provided in Table 6.17 on the following page. The overall progression of the alternative investors is more progressive than the homeowner occupiers (0.1260) and the tenant / landlords (0.1326). This is to be expected as both the income tax and capital gains tax systems are significantly more progressive for the alternative investors as compared with the homeowner occupiers and while the capital gains tax system is less progressive than that of the tenant / landlords, the more heavily weighted income tax system is significantly greater.

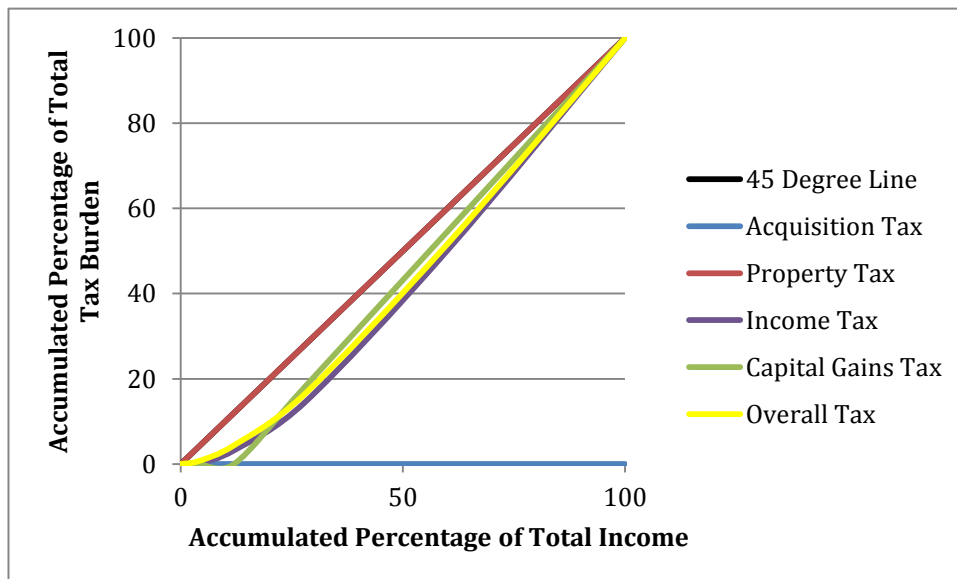
The S curves as determined by the four specific tax systems and the overall progression measurement relative to the US alternative investors are reflected in Figure 6.22. Once again, the progression curve for the overall tax system closely follows that of the income tax system due to the relative weightings.

Table 6.17 The Suits index determining the overall progressivity of the US tax system for alternative investors

	Acquisition Taxes (AT)	Property Taxes (PT)	Income Taxes (IT)	Capital Gains Taxes (CGT)	Overall Tax Obligations
Cumulative Tax Obligations	\$0	\$315,017	\$1,882,033	\$47,077	\$2,240,127
Overall ATR	0.0%	3.03%	18.09%	0.41%	21.53%
Weights	0.0%	14.1%	84.0%	1.9%	100.0%
Tax-Specific Suits Indices	0.0000 ¹⁹⁷	0.0000 ¹⁹⁸	0.1626 ¹⁹⁹	0.1200 ²⁰⁰	
Extended Suits Indices	0.0000	0.0000	0.1366	0.0023	0.1389

Appendix IV (Overall Measures of Progressivity), page 234.

Figure 6.22 Suits curves depicting the progression of the US taxes for alternative investors



Appendix III (Chapter 6 Figures), page 132.

In summary, the Suits indices measuring the degree of progressivity of overall tax systems for the US alternative investors, the tenant / landlords and homeowner occupiers are 0.1389 and 0.1326 and 0.1260, respectively. This order of progression

¹⁹⁷ The reader is referred to page 244 of this chapter.

¹⁹⁸ The reader is referred to page 249 of this chapter.

¹⁹⁹ The reader is referred to page 264 of this chapter.

²⁰⁰ The reader is referred to page 272 of this chapter.

is inconsistent with that of the structural and distributional indices calculated on the income tax data. This is not surprising, given the more significant amount of capital gains tax incurred by the tenant / landlord and its effect on the weighting. In addition to the large differences in capital gains taxes, the tenant / landlords incur acquisition taxes whereas the alternative investor does not. Again, this affects the weighting, diluting even more the extended S index related to income taxation. Interestingly, the significant differences in comprehensive incomes (over \$1 million) between the alternative investors and the tenant / landlords do not affect significantly (fractional differences exist) the overall average tax rate for these two sets of investors.

Similar calculations are drawn for the structural indices with the results, which are summarised in Table 6.18.

Table 6.18 Summary of structural indices measuring the degree of progression of the US tax system.

Structural indices	Homeowner occupiers	Alternative Investors	Tenant / Landlords
Average Rate Progression (ARP)	4.2911E-08	7.71381E-08	7.81957E-08
Marginal Rate Progression (MRP)	3.28104E-08	3.23065E-08	2.826883E-08
Liability Progression (LP)	2.829279971	3.396912567	3.298007208

Appendix IV (Overall Measures of Progressivity), pages 233, 234 and 235, respectively.

Inconsistencies among the respective structural indices and the suits index are again present. However, consistent with the attempt using UK data, the LP overall progression indices in the US simulation yield the same order of progression with the Suits indices (i.e. alternative investors, tenant / landlords and homeowner occupiers). The MRP overall progression indices indicate the homeowner occupiers experience a more progression system, followed by the alternative investors and then the tenant / landlords. The ARP indices rank the tenant / landlords as most progressive, followed by the alternative investors and then the homeowner occupiers. The

numerical results are provided in Table 6.18 and the respective bar charts are depicted in Figures 6.23 and 6.24.

Figure 6.23 Degrees of progressivity of the US overall tax system for all three investors as determined by the ARP and MRP progression indices

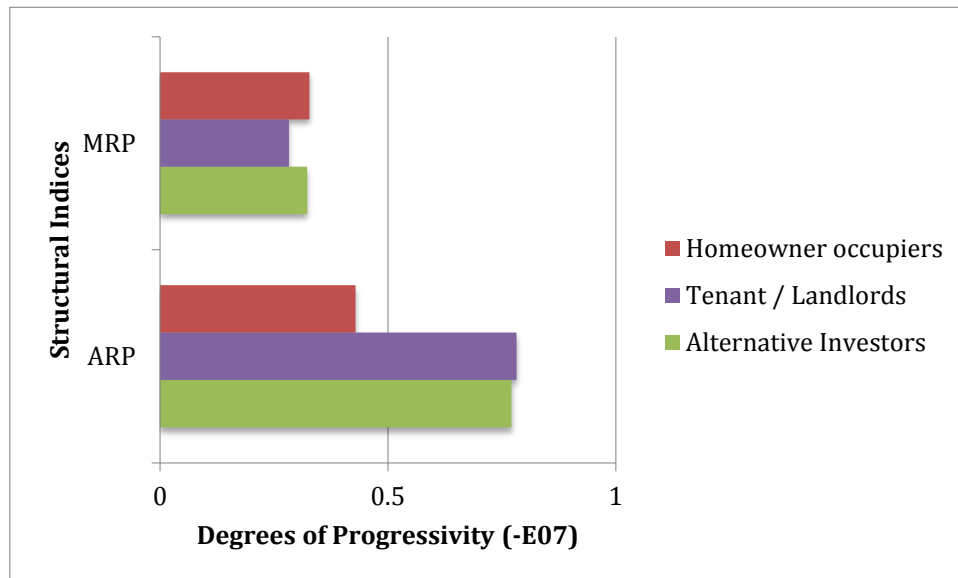
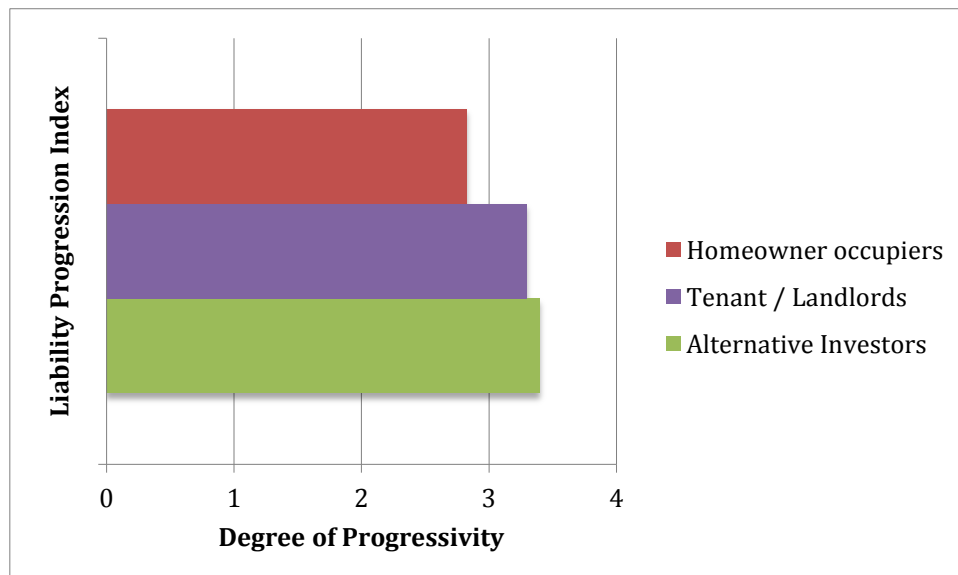


Figure 6.24 Degree of progressivity of the US overall tax system for all three investors as determined by the liability progression index



Appendix III (Chapter 6 Figures), page 133.

It is an interesting observation that the order of progression as determined by the extended Liability Progression measures is consistent with the results of the Suits

measures for both countries. This will be an interesting point to pursue in later research. Unfortunately however, the inconsistencies of the other structural indices modified to measure the progression of the overall tax systems are too great and too many to lead one to conclude that such a methodology is universally transferable. For this reason, the Suits index will be the sole determinant of overall progression in this research.

Conclusions, comparisons and contrasting results

With regard to the progressivity of the overall UK tax system as measured by the Suits index, the homeowner occupiers experience the greatest progression in comparison with the other investors. In direct contrast, homeowner occupiers in the US experience the least amount of progression when compared with US alternative investors and tenant / landlords. This is partly attributed to the regressive nature of the UK mortgage interest relief and the progressive nature of the US itemized deductions. This concept is explained fully in the following chapter when neutrality is explored.

The degrees of progressivity determined for the tenant / landlords in both countries fall between the respective homeowner occupiers and the alternative investors.

In contrast again, the alternative investors in the UK experience the least progression in the overall tax system whereas the US alternative investors experience the greatest degree of progressivity. This is largely due to the fact that the US alternative investors are subjected to the capital gains tax whereas the UK alternative investors are able to avoid such taxation.

The levels of progressivity of all three types of investor are greatest in the US when the indices are directly compared with those of the UK investors. In fact the least progressive index in the US (i.e. homeowner occupiers at 0.1260) is greater than the highest degree of progression measured in the UK (i.e. homeowner occupiers at 0.1071). This would suggest that the overall tax system in the US is noticeably more progressive than that of the UK.

6.2. Vertical equity (progressivity): conclusions

Research Question 2 asks how vertically equitable (progressive) are the owner-occupied housing tax policies in each country studied. This has been broken down into the following three sub-questions:

- How progressive are the specific tax policies?
- How progressive is the combined overall effect of the respective owner-occupier housing tax policies in each country on a longitudinal basis?
- How does the progressivity of one country's specific tax policies and the overall tax impact compare with the other country studied?

These sub-questions are answered by way of an overall conclusion on vertical equity (progressivity) in this section.

6.2.1. How progressive are the specific tax policies and how does that progressivity differ between the different types of investors?

The UK acquisition taxes in 1990/91 have two distinct stages of taxation: property transactions equal to or less than £30,000 in consideration are exempt from taxation and, property transactions in excess of £30,000 are taxed entirely at 1%. A stepped system of taxation such as this one appears to be proportional with effective progression. However the literature is clear in that to be a proportional system of taxation, the same rate of tax must be applied regardless of income level. Therefore, the UK acquisition tax system is indeed a progressive one. Vertical equity is inherent in the system given the exemption for low-income families. Property investors, regardless of purpose, are subject to this form of taxation under the old stamp duty legislation (relevant at the beginning of the study period). Since 1993/94 such transactions are administered under the stamp duty land tax (SDLT), which is a topic for discussion in Chapter 8 (Trends). The same vertical equity (progressivity) applies to investors in homes for occupation or for real estate investment. With regard to investors in financial securities, the stamp duty legislation provides for proportional taxation of 0.5%, without threshold. That being the case, the acquisition taxes imposed on property investors are more vertically equitable than

securities investors in that there exists a non-taxable band for the lower income earners/investors.

The US acquisition tax system for property transactions vary among the states. The tendency is for proportional taxation as is assumed within the simulation. This being the case, there is no degree of progressivity inherent in the system. This system of taxation does not vary with regard to the type of property investment, whether it is for owner-occupied housing or rental properties. There are no acquisition taxes imposed on investors of financial securities.

The UK Community Charge was and the Council Tax is a regressive form of property taxation. This is apparent in the rate structure and evident in the four indices calculated within the simulation. The S index calculated on the cumulative (twenty years) income and tax data as derived from the simulation yield a Suits index of -0.2004. The reader is referred back to Table 6.1 for a list of the three structural indices' results. As the community property tax and the superseding council tax are assessed on the occupant of the property, the same liabilities are incurred whether the occupant is the homeowner or simply a tenant. Therefore, there is no variation in the vertical equity (or inequity) of the UK property tax system. Certain concessions apply (i.e. full-time students, elderly, low income families) which affect the vertical distribution of the tax, but these concessions are beyond the scope of this study as they are not relevant to the case families simulated.

The US property tax varies among municipalities and locales in terms of assessment, rate structure, concessions, and *et cetera*. A particular state's policy is assumed within the simulation, with rates in line with the national averages as per the two relevant census' and administration policies that are deemed to be a reasonable representation. The rates applied are proportional with the exception of a slight concession for the lowest tiered homeowner in the first six years of the study. In conclusion, property taxation tends to be proportional with very little if any progressivity built in at the bottom of the income scale. Whether the analysis recognises the economical incidence of the property tax or simply the formal (legal) incidence, determines whether or not the tenant of a rental property realises the US property tax. As the simulations are set within the user-cost framework, the economic incidence is applicable. Therefore, the alternative investors and the tenant

/ landlords incur the same property tax obligations, which are proportional without concessions. In conclusion, the US property tax system is slightly more vertically equitable for those invested in homes for occupation as compared with other investors.

The UK income tax system is progressive with at least two rates of taxation and a personal allowance, which introduces a nil-rate band. Similarly, the US income tax system is progressive with at least three rates of taxation and standard allowances and personal exemptions introducing a nil-rate band. Tables 6.19 and 6.20 set out the ARP indices and Suits indices for the homeowner occupiers against the other investors in both countries. The variations in these indices may be representative of the progression (or regression) of the benefits themselves. These are established in Chapter 7 when neutrality is systematically introduced into both systems and the true measures of the benefits are quantified. Subsidy (1) in Table 6.19 refers to the benefit of mortgage interest relief (and real estate tax deduction in the US). Subsidy (2) in Table 6.20 refers to the omission the imputed rental income as well as the mortgage interest relief (and real estate tax deduction). The negative differences reflect how much less progressive the other investors' tax systems are in comparison with homeowner occupiers. Positive differences are how much more progressive the systems are in comparison.

Table 6.19 Differences in ARP and S indices between homeowner occupiers and alternative investors in both countries: Subsidy (1)

	United Kingdom		United States	
	ARP Index ²⁰¹	Suits Index ²⁰²	ARP Index ²⁰³	Suits Index ²⁰⁴
Homeowner	1.65739E-07	0.1270	5.15837E-08	0.1512
Alt Investor	<u>1.58359E-07</u>	<u>0.1186</u>	<u>6.25914E-08</u>	<u>0.1626</u>
Subsidy Index (1)	<u>-7.38056E-09</u>	<u>-0.0084</u>	<u>1.10076E-08</u>	<u>0.0114</u>

²⁰¹ The reader is referred to page 257 of this chapter for these indices.

²⁰² The reader is referred to page 259 of this chapter for these indices.

²⁰³ The reader is referred to page 262 of this chapter for these indices.

²⁰⁴ The reader is referred to page 264 of this chapter for these indices.

Table 6.20 Differences in ARP and S indices between homeowner occupiers and tenant / landlords in both countries: Subsidy (2)

	United Kingdom		United States	
	ARP Index ²⁰⁵	Suits Index ²⁰⁶	ARP Index ²⁰⁷	Suits Index ²⁰⁸
Homeowner	1.65739E-07	0.1270	5.15837E-08	0.1512
Tenant / Landlord	<u>1.47499E-07</u>	<u>0.1169</u>	<u>6.51215E-08</u>	<u>0.1687</u>
Subsidy Index (2)	<u>-1.82408E-08</u>	<u>-0.0101</u>	<u>1.35377E-08</u>	<u>0.0175</u>

The UK capital gains tax system fully exempts the gain on the disposal of the principal residence. Vertical equity cannot be assessed in a system in which the gain is exempt. The alternative investors, however, fall within the tax base but are able to avoid capital gains taxation through careful tax planning. It is arguable that the annual exemption enjoyed by all families within this study introduces an element of regressivity into the system. This is demonstrated by substituting 1 pence for the nil liabilities of the five alternative investors in calculating the Suits index for capital gains taxation in the UK simulation (with reference to Figure 6.17). Given the fact that the highest tiered alternative investor (UK-A5) in the simulation earns and invests at five times the national average, it is a very small minority that would not be able to avoid capital gains taxation through careful tax planning. Ultimately, the system can be progressive given the two rates of tax (i.e. 0% and 18%), but for purposes of this study, the regressive nature of the tax through exemption is recognised. Finally, with regard to the capital gains taxation for the tenant / landlords, the system is progressive with a two rate structure (0% and 18%). The S index determined on the cumulative income and tax data yields a positive result of 0.1288. The ARP and LP indices for the same are 1.02987E-09 and 3.792266269, respectively.

The tax on US capital gains appears to be proportional on two levels (0% and 15%) given the fact that either the taxpayer is wholly exempt or fully taxed at 15%.

²⁰⁵ The reader is referred to page 257 of this chapter for these indices.

²⁰⁶ The reader is referred to page 259 of this chapter for these indices.

²⁰⁷ The reader is referred to page 262 of this chapter for these indices.

²⁰⁸ The reader is referred to page 264 of this chapter for these indices.

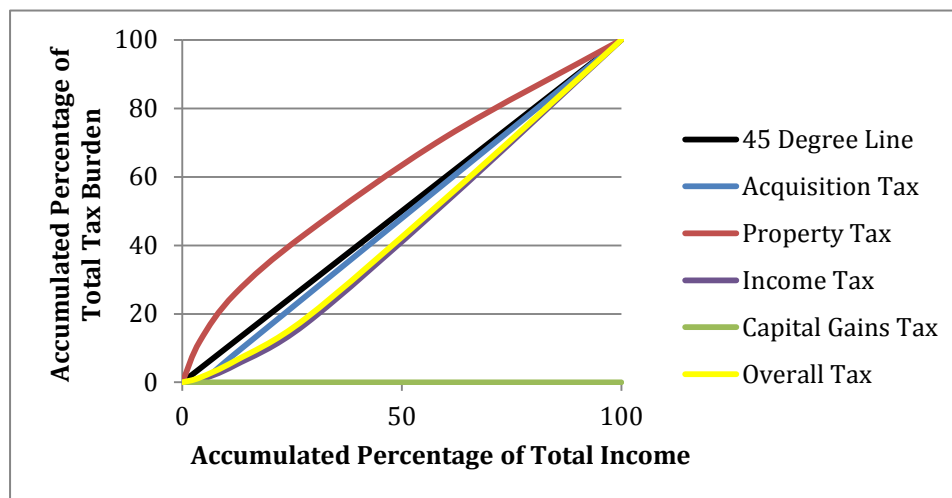
However, the literature is clear in that a truly proportional tax system administers one rate of tax at all levels of income (Norregaard (1990), OECD (1990), Rosen (2005), among others). The US capital gains tax system is therefore considered a progressive tax system. In addition to the pure capitals tax, an ordinary tax on the accumulated depreciation is levied on disposition. The tax on depreciation recapture (relevant for the tenant / landlords) is progressive up to a maximum rate of 25%. The S index determined on the cumulative income and tax data yields a positive result of 0.0514 for the tenant / landlords. The ARP and LP indices for the same are 2.44822E-07 and 1.528060495, respectively.

6.2.2. How progressive is the combined overall effect of the respective owner-occupier housing tax policies in each country on a longitudinal basis?

The S indices measuring the degree of progressivity of overall tax systems for the UK homeowner occupiers, the tenant / landlords and alternative investors are 0.1071, 0.09976 and 0.09966, respectively. The homeowner occupiers bear the most progression in the overall tax system of the three investors.

The combined overall progressivity measure is a culmination (weighted average) of the specific progressivity measures as determined within the simulation. The progressivity of the UK specific taxes together with the progressivity of the overall tax systems as determined by the four specific taxes is reflected in the S curves of Figure 6.15 earlier in this chapter and reproduced here in Figure 6.25.

Figure 6.25 Suits curves depicting the progression of the UK specific and overall taxes for homeowner occupiers

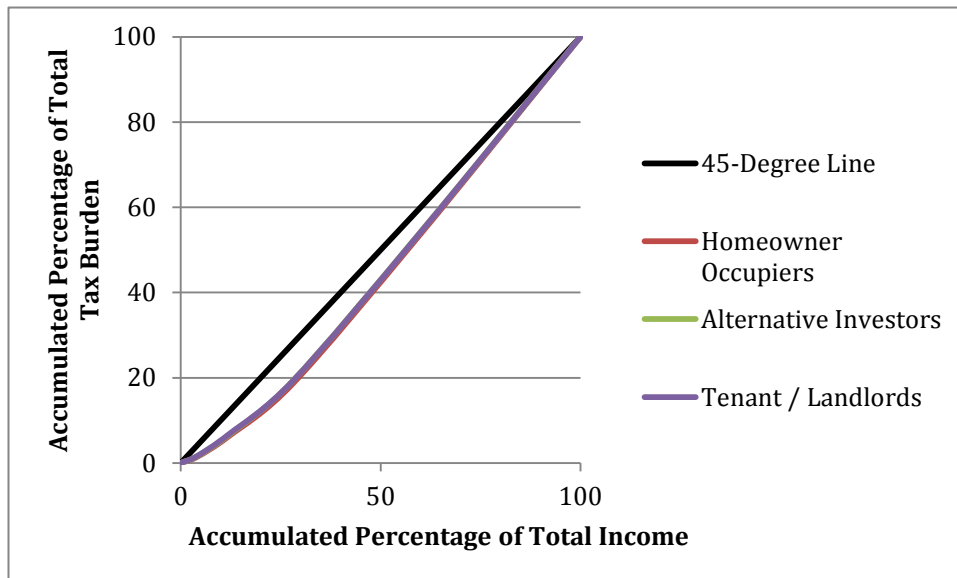


Appendix III (Chapter 6 Figures), page 133

The reader is referred to Figures 6.16 and 6.17 for similar depictions of the specific and overall tax progression curves for the UK tenant / landlords and the UK alternative investors.

A comparison of the levels of progressivity for all three UK investors' is provided in Figure 6.26, which depicts the S curves as determined by the overall tax systems. The proximity of the S curves to each other is too close to distinguish between them other than the fact that the tenant / landlords experience the less progression than the homeowner occupiers (the alternative investors line is completely obscured despite the fact they experienced the least progression of the three). This result is similar to the depiction of the progressivity of three UK investors' income tax systems in Figure 6.8, earlier in this chapter. The similarity is due to the heavy weighting of the income tax in comparison with the other three taxes considered in the overall tax system as defined by this study.

Figure 6.26 Suits curves depicting the progression of the UK overall tax system for all three investors

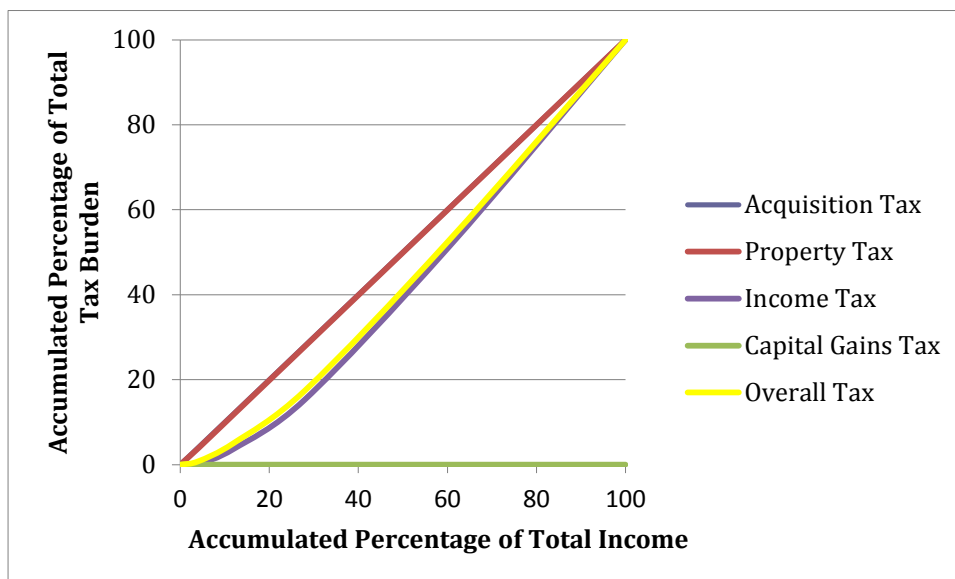


Appendix III (Chapter 6 Figures), page 134.

The S indices measuring the degree of progressivity of overall tax systems for the US homeowner occupiers, tenant / landlords and alternative investors are 0.1260, 0.1326 and 0.1378, respectively. The homeowner occupiers bear the least progression in the overall tax system of the three investors.

The S curves reflecting the progressivity of the US specific and overall tax systems of the homeowner occupiers is depicted in Figure 6.20 and reproduced here in Figure 6.27. The S curve reflecting the progressivity of the acquisition taxes cannot be distinguish from the S-curve of the property taxes (red) as the acquisition taxes are completely proportional and the property taxes are nearly so. The yellow S curve resting above the income tax (purple) S curve represents of the progressivity of the overall US tax system, which is the weighted average of the four taxes the system comprises.

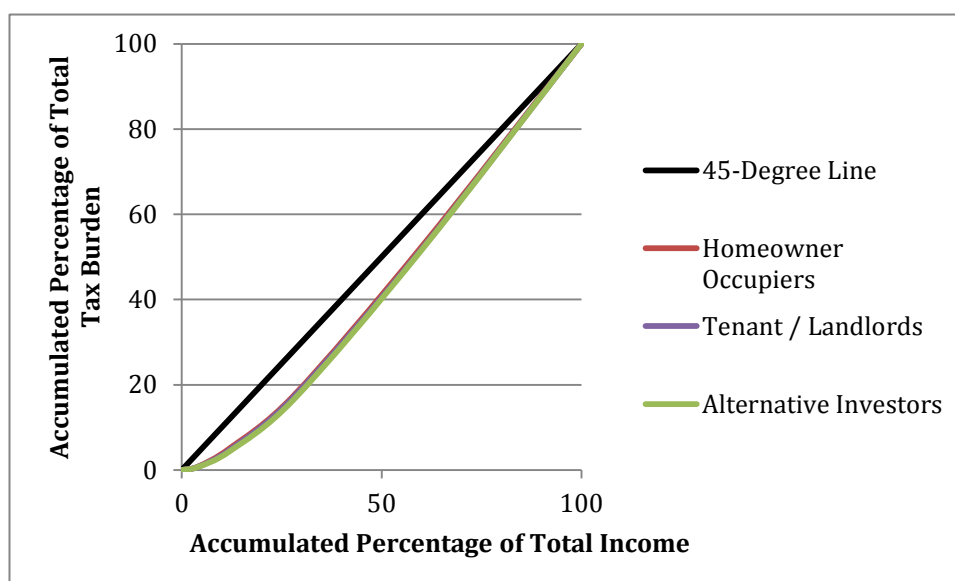
Figure 6.27 Suits curves depicting the progression of the US taxes for homeowner occupiers



Appendix III (Chapter 6 Figures), page 136

A comparison of the levels of progressivity for all three US investors' is provided in Figure 6.28, which depicts the S curves as determined by the respective overall tax systems. The proximity of the S curves to each other is too close to distinguish between them other than the fact that the homeowner occupiers experience the less progression than the alternative investors (the tenant / landlords' S curve is completely obscured by the two other investors' S curves). This result is similar to the depiction of the progressivity of three US investors' income tax systems in Figure 6.12, again, because of the heavy weighting of the income taxes relative to the other taxes involved.

Figure 6.28 Suits curves depicting the progression of the US overall tax system for all three investors



Appendix III (Chapter 6 Figures), page 135.

6.2.3. How does the vertical equity of one country's specific tax policies and the overall tax impact compare with the other country studied?

The acquisition taxes in the UK are more vertically equitable than the US in that there is a level of non-taxation in the former and not the latter. The rate of taxation, however, is greater in the UK and the result is a difference in average tax rates of 0.05%.

The UK property tax system is unquestionably regressive whereas the US locales tend towards proportionality with the possibility of mild progression at the lowest levels of income and investment. The average property tax rates for the two countries are 1.58%²⁰⁹ (UK) and 2.85%²¹⁰ (US), based on the cumulative property tax obligations to the cumulative comprehensive income.

Both countries' income tax systems are progressive but the impacts of the owner occupied housing subsidies have very different effects. The UK homeowner occupiers experience more progression with regard to income taxation as a result of the two notable subsidies (i.e. the allowance of mortgage interest relief and the

²⁰⁹ The reader is referred to Table 6.11 on page 276 for this average tax rate.

²¹⁰ The reader is referred to Table 6.15 on page 283 for this average tax rate.

omission of an imputed rental income from income taxation). The US homeowners experience less progression. The reason for these opposing impacts is explain fully in Chapter 7 when neutrality is considered. The average tax rates based on the cumulative income tax obligations in relation to cumulative income in the UK and the US are 24.8%²¹¹ and 14.4%²¹² respectively.

Both countries effectively exempt homeowner occupiers from capital gains taxation (the UK exempts entirely and the US case families do not breach the taxable threshold and are effectively exempt). Therefore vertical equity cannot be considered with regard to capital gains taxation, as it is not a factor in the overall tax scheme for families in either country.

When comparing the S indices measuring the progressivity of the countries' tax systems taken as a whole, besides the fact that the homeowner occupiers have opposing rankings in both countries, the variations between the three investors are notably greater in the US. With regard to the homeowner occupiers and alternative investors, this variation is partly due to the significant effect the US mortgage interest relief plays on progression in comparison with MIRAS and the fact that the MIRAS effect is limited to the first half of the study. The differences in rental real estate taxation in the two countries account for the variations between alternative investors and tenant / landlords.

The overall average tax rates calculated on the cumulative overall tax obligations to cumulative comprehensive income are 26.5%²¹³ and 17.3%²¹⁴ in the UK and the US, respectively. One final point on the comparisons of the two simulations is that while the UK imposes a far greater average overall percentage (mainly through the income tax system) on its taxpayers, the US tax system is notably more progressive. The degrees of overall tax progression are measured to be 0.1071²¹⁵ and 0.1260²¹⁶ for the homeowner occupiers of the UK and the US, respectively. The variation (a difference of 0.0189) is slight but discernible when the respective S curves are plotted together as in Figure 6.29.

²¹¹ The reader is referred to Table 6.11 on page 276 for this average tax rate.

²¹² The reader is referred to Table 6.15 on page 283 for this average tax rate.

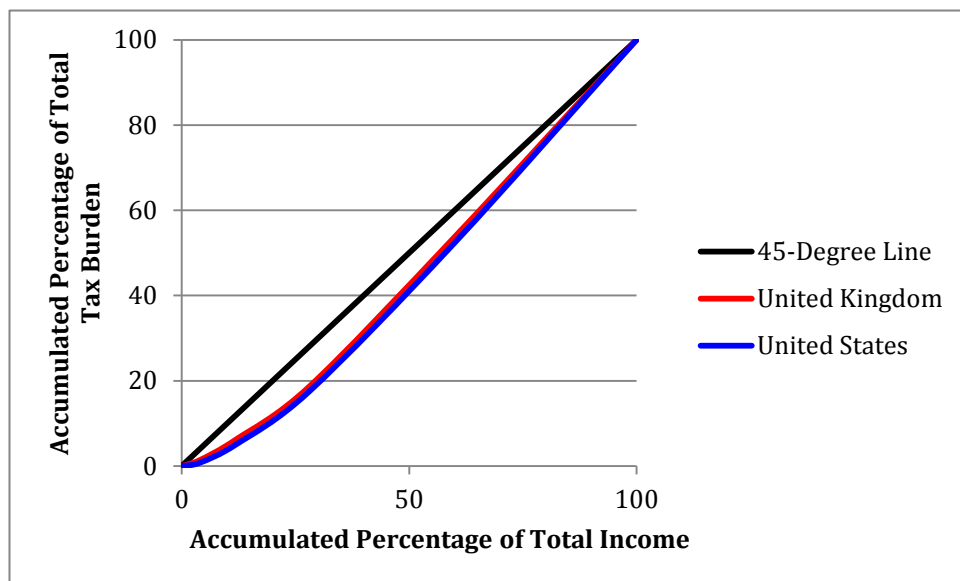
²¹³ The reader is referred to Table 6.11 on page 276 for this average tax rate.

²¹⁴ The reader is referred to Table 6.15 on page 283 for this average tax rate.

²¹⁵ The reader is referred to Table 6.11 on page 276 for this computation.

²¹⁶ The reader is referred to Table 6.15 on page 283 for this computation.

Figure 6.29 Suits curves depicting the progression of the UK and US overall tax systems for homeowner occupiers



Appendix III (Chapter 6 Figures), page 135.

The variation in progressivity for the other investors is even greater. The UK tenant / landlords measure at 0.09976^{217} whereas the US tenant / landlords measure at 0.1326^{218} , a difference of 0.03284 . The UK alternative investors' degree of progressivity measures at 0.09966^{219} whereas the US alternative investors' progressivity measures at 0.1389^{220} , a difference of 0.03924 .

6.2.4. Conclusion

This analysis focuses on the vertical equity aspect of the specific tax policies that affect homeowner occupiers as well as the overall tax impact in comparison with investors in alternative capital assets (i.e. rental real estate and financial securities). Vertical equity is considered in terms of progressivity, stemming from the ability-to-pay principle (Smith, 1999/1776 and Mill, 1848, among others) and optimal taxation (Musgrave, 1958, Slemrod, 1983, and Rosen, 2005, among others).

²¹⁷ The reader is referred to Table 6.12 on page 278 for this computation.

²¹⁸ The reader is referred to Table 6.16 on page 285 for this computation.

²¹⁹ The reader is referred to Table 6.13 on page 279 for this computation.

²²⁰ The reader is referred to Table 6.17 on page 287 for this computation.

The methodology used within the study is a series of measures involving the average tax rates, marginal tax rates and the elasticity of tax revenues with respect to income. Three structural indices as established by Pigou (1928) and later discussed by Musgrave and Thin (1948) are used: the average rate progression index, the marginal rate progression index and the liability progression index. The representative agent construct relative to this study's micro-simulation lends itself to structural analyses. The absence of sample data would ordinarily make distributional analyses uninformative but for the Suits index as established by Suits (1977). In addition to the structural indices, the Suits indices are measured. This enables the measurement of the progressivity of overall tax systems as determined by the specific tax systems studied within.

The methodology used within the study considers the *paired, within-country and cross-country analyses* in accordance with the methodology established by Maylor and Blackmon (2005). By comparing the measures of progressivity determined for the homeowner occupiers with the measures determined for the other investors within the same country's tax system, the impact of the tax aspects specific to homeownership on progression become apparent. The general levels of progressivity and the respective influences of favourable tax policies are then compared with those of other country to further inform. The systematic approach undertaken in the simulations is intended to eliminate researcher bias and establish a basis for analytical generalisation.

Both countries' specific tax systems have varying inherent vertical inequities resulting from the differences in rate structures, allowances and exemptions. The UK homeowner occupiers experience more progressivity in the acquisition tax system when compared with the US investors given the provision for a nil-rate band in the UK national tax system and no such provision in most US states' systems. US homeowner occupiers experience more progressivity in a typical property tax system, which is either entirely proportional or mildly progressive given the possible provision of a low level concession. The two UK property tax systems considered in this study are regressive and therefore less progressive than even a proportional US property tax system. The US income tax system is more progressive than the UK income tax system, regardless of investment choice. In fact, the least progressively

taxed US investors experience a greater degree of progressivity than the most progressively taxed UK investors. The homeowner occupiers are taxed more progressively in the UK as compared with the other UK investors, whereas the homeowner occupiers in the US are taxed less progressively than the other US investors. This leads one to conclude that the tax provisions specific to homeowner occupiers enhance the progressivity of the UK income tax system and hinder the progressivity of the US income tax system. This will be explored more thoroughly in the following chapter when neutrality is considered and subsidies are decomposed. Finally, the US capital gains tax system with regard to the sale of the principal residence by the homeowner occupier is progressive whereas the UK tax system specifically excludes such property from capital gains taxation. While the US case families within this study did not breach the taxing threshold, the system is nonetheless progressive.

The methodology developed by Suits (1977) for measuring the degree of progressivity of a tax system comprised of two or more individual taxes is simply the weighted average of the indices of the specific taxes of which the overall tax system is comprised. An attempt to apply such a methodology to the structural measures of progressivity is made within this research. The aim is to ascertain the transferability of such a methodology from the distributional analysis of its origin to structural analyses. If the results are consistent with those determined under the Suits-index analysis, the research may offer an extension of the simple structural analyses established last century. The results from two of the three structural indices are unfortunately inconsistent and deemed uninformative. However, in both the UK and US simulations, the extended results of Liability Progression are consistent with the respective results of the Suits overall progression with regard to determining the order of progression of the three investors. This suggests that the Suits (1977) method of measuring the overall progressivity of a tax system may be applied to the structural measure of liability progression. Further research is warranted, but beyond the scope of this study.

Overall, the US investors experience a more progressive tax system when compared directly with the UK investors. In fact the US homeowner occupiers, while experiencing the least progression from the US tax system, are taxed more

progressively than the UK homeowner occupiers who are experiencing the most progression in the UK tax system relative to the other respective investors studied. Given the significant weighting of the index derived from the income tax system in determining the progressivity of the overall tax system, this is an observation simply echoing an earlier observation with respect to the two countries income tax systems. In sum, two conclusions may be drawn from this. First, the US tax system is inherently more progressive than the UK tax system with specific reference to the income tax system. Second, based on the order of progression deduced in the study, certain elements considered within the overall taxation of homeowner occupiers enhance the progressive taxation of UK investors and hinder the progressive taxation of the US investors. It is evident that the different provisions for mortgage interest relief and the non-taxation of imputed rental income are significant contributing factors as reflected in Tables 6.19 and 6.20 in Section 6.2.1. This will thoroughly discussed in the next chapter when the subsidies are formally decomposed.

Chapter 7: Equity effects from increased neutrality and a decomposition of subsidies

Thus far the equity analyses of the tax treatment of those invested in owner occupied housing has been compared with two sets of hypothetical case families with identical economic circumstances to the homeowner occupiers but invested in alternative investments or residential rental properties. This methodology is a form of benchmarking, where the two other investors are established as the benchmarks and their simulated liabilities are compared with the liabilities of the homeowner occupiers to establish the departures resulting from an alternative tax treatment. Another well-recognised form of benchmarking analysis in this area of research involves the establishment of hypothetical alternative tax systems that introduce increasing levels of neutrality. This methodology has been discussed in the literature produced by Flood and Yates (1989), Wood (1990), Hancock and Munroe (1992), Haffner and Oxley (1999), Haffner (2000), and Thalmann (2005 and 2007).

There are three recognised steps of neutrality regarding owner-occupied housing taxation (Flood and Yates, 1989 and Hancock and Munroe, 1992). At the bottom of the hierarchy there is the ‘commonly accepted’ benchmark of the existing tax system, which eliminates mortgage interest relief from the income tax computations. Secondly, the ‘tenure neutral’ benchmark corrects for the absence of imputed rental income in the homeowner occupiers’ income tax base. Finally, the ‘tax neutral’ benchmark corrects for both income and capital taxation. This alternative form of analysis enables the third research question and sub-questions to be answered.

Research Question 3: What would the effect on equity be under more neutral tax regimes in both countries?

- How much of the inequities are attributed to the mortgage interest relief?
- How much of the inequities are attributed to the absence of imputed rental income?
- How much of the inequities are attributed to the absence of imputed rental income and capital gains taxation?

Figure 7.1 The analytical steps underpinning chapter 7 (page 1 of 5)

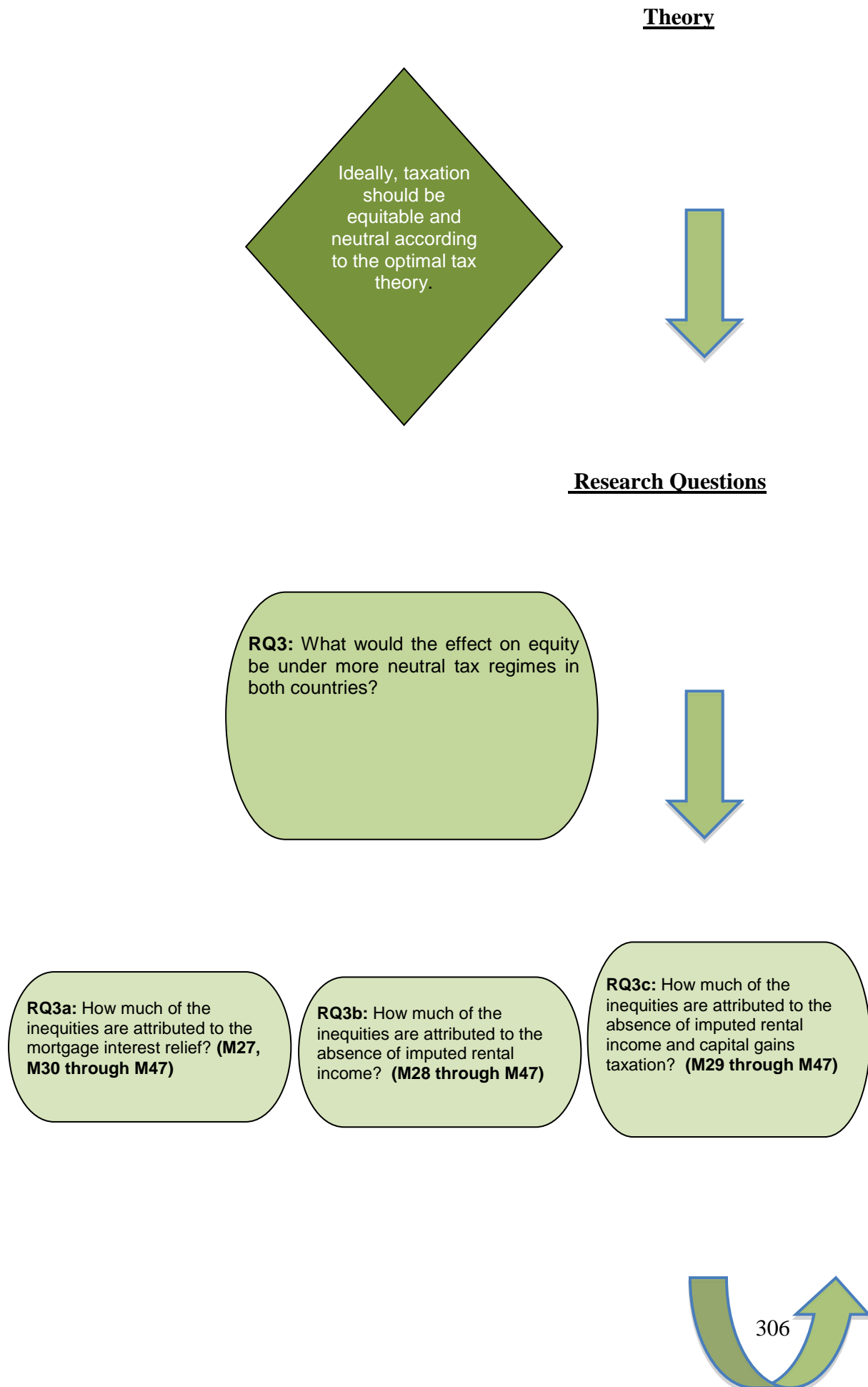
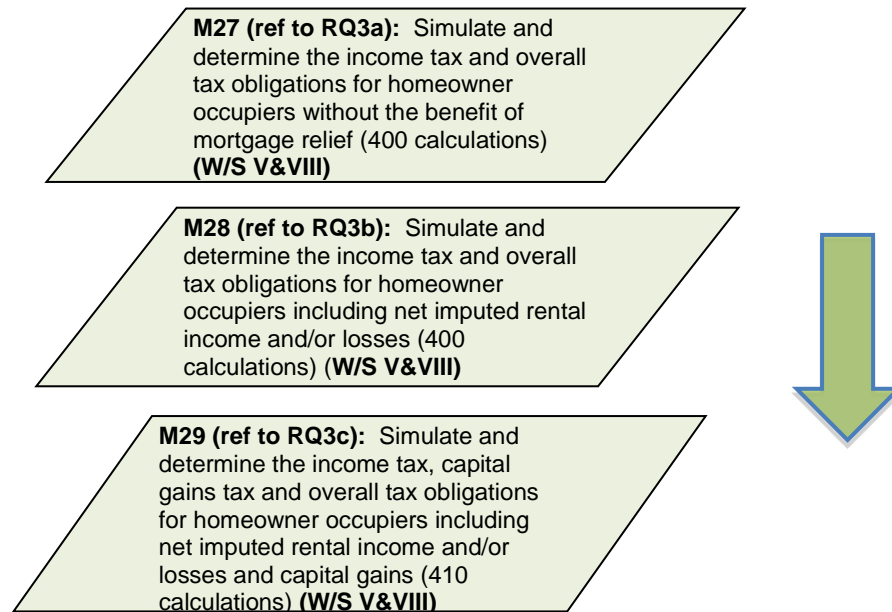


Figure 7.1 The analytical steps underpinning chapter 7 (page 2 of 5)

Methods



Point and Paired Analysis (Horizontal Equity)

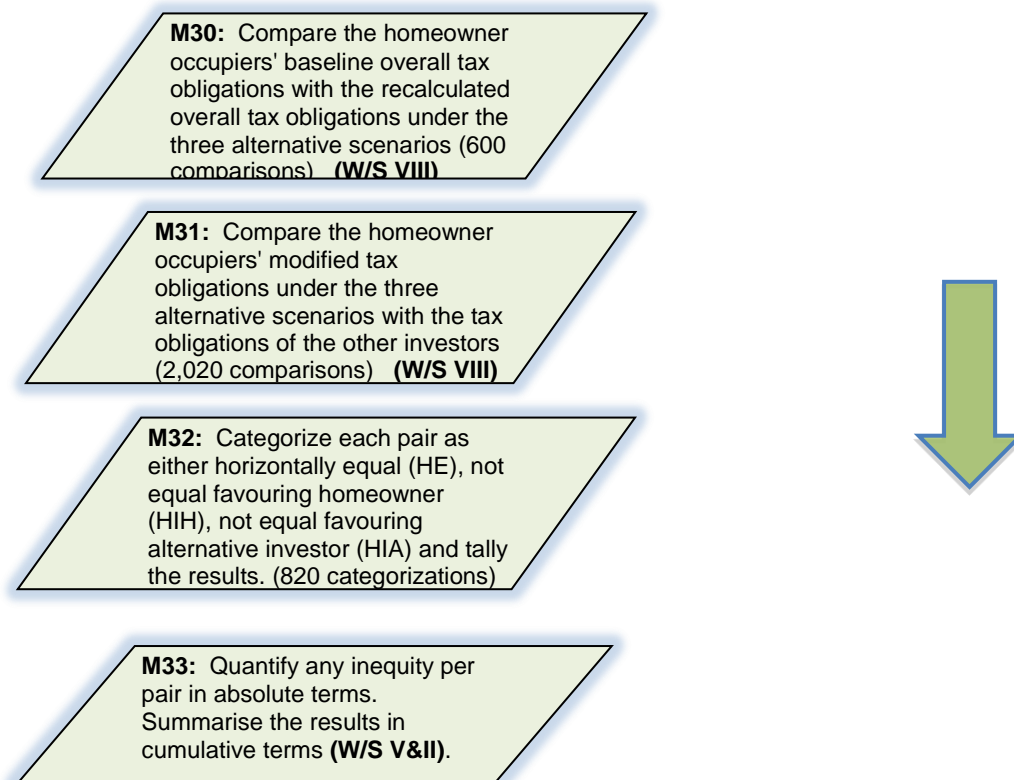


Figure 7.1 The analytical steps underpinning chapter 7 (page 3 of 5)

Point and Paired Analysis (Vertical Equity)

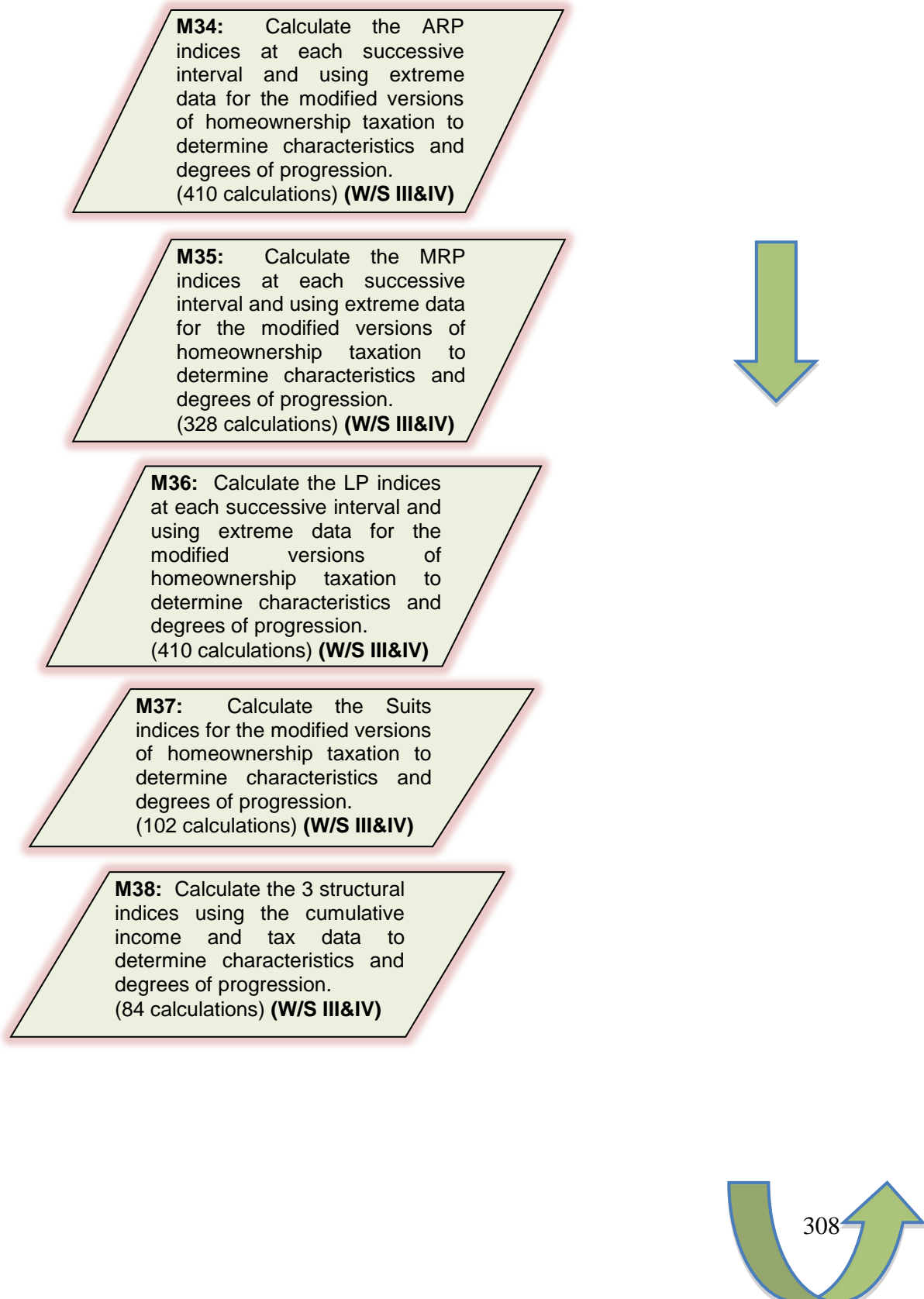


Figure 7.1 The analytical steps underpinning chapter 7 (page 4 of 5)

Point and Paired Analysis (Vertical Equity)

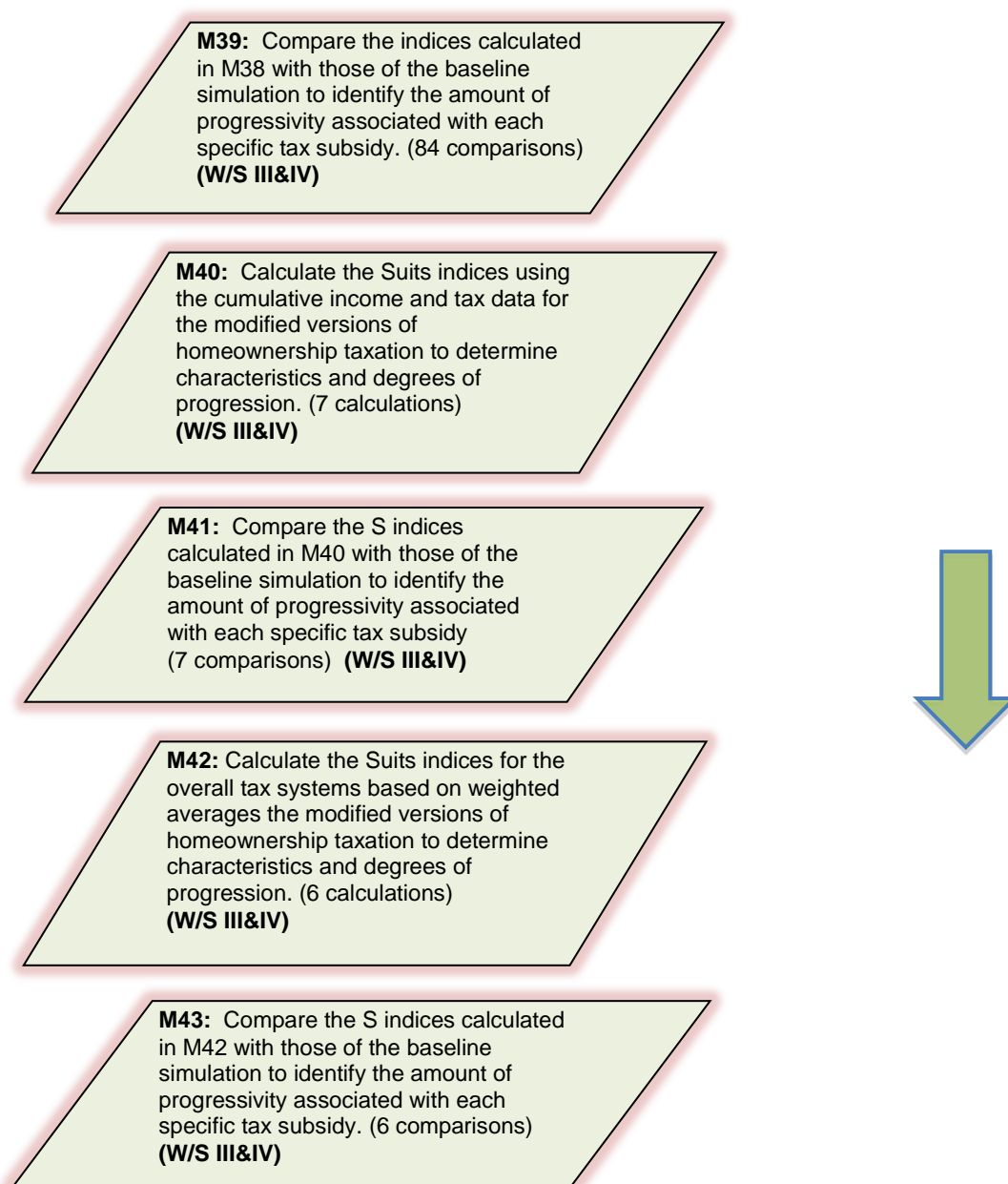
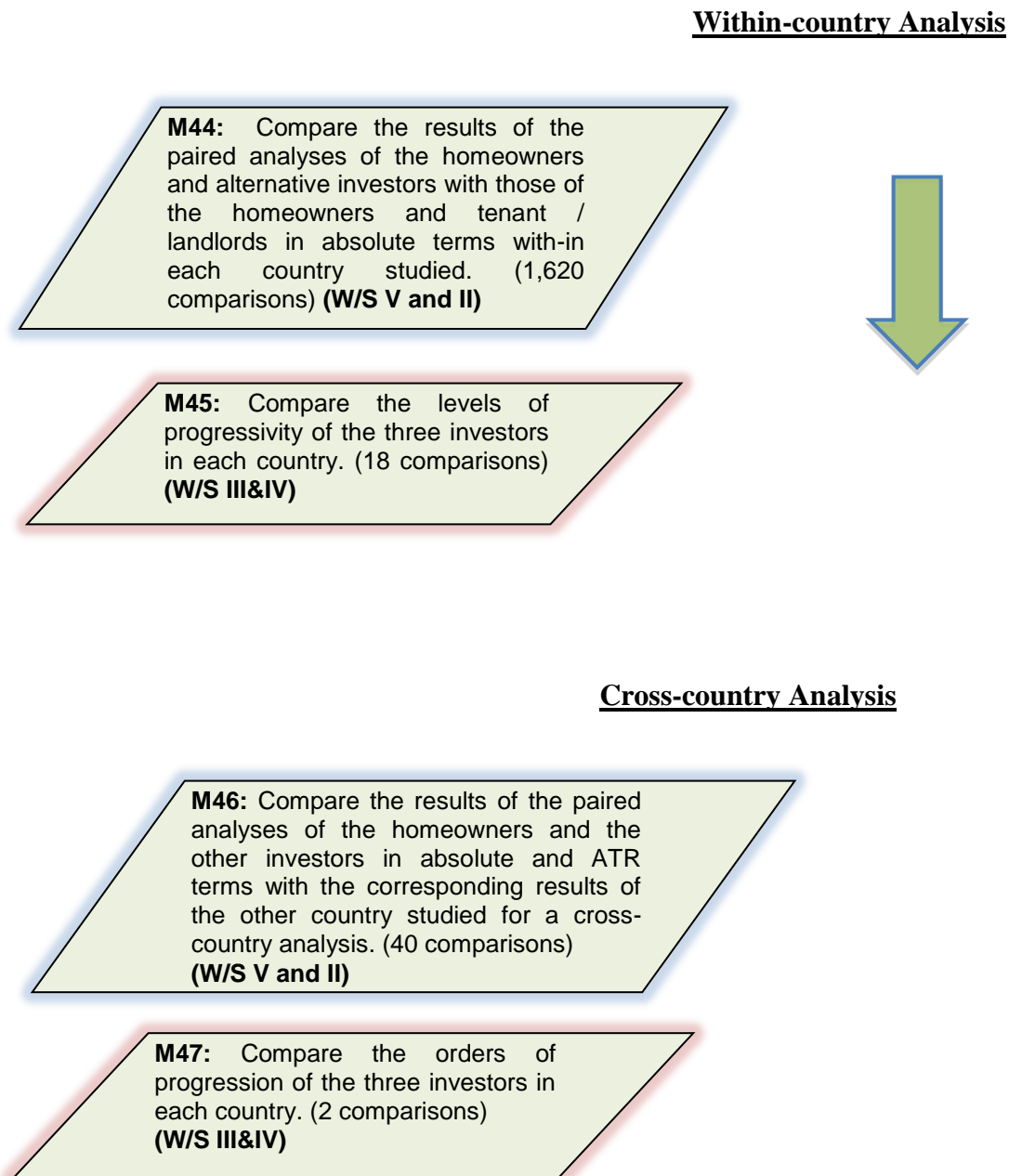


Figure 7.1 The analytical steps underpinning chapter 7 (page 5 of 5)



7.1. Neutrality analysis and decomposition of subsidies: results

The purpose of this section is twofold. First is to consider the equity effect under more neutral tax regimes. Neutrality, as established in the Literature Review (Chapter 2) may be considered in stages. The first stage is to remove the subsidies that are contrary to the generally accepted principles of the respective tax regimes. The second stage is to include an imputed rental income in the income tax systems for tenure neutrality. The third and final stage is to include capital gains in the capital gains tax systems for tax neutrality. In order to analyse the equity effect from these staged improvements in neutrality, modifications to the existing simulations are required. The effect on equity will be considered from horizontal and vertical perspectives and in terms of improvements and hindrances.

The second purpose of this section is to decompose the existing tax subsidies in the UK and US tax systems through consideration for the above three alternative tax scenarios aimed at improving tax equity through neutrality. In so doing, a better understanding of each country's favouritism towards homeowner occupiers may be established, compared and contrasted.

A diagram of the first three steps of the deductive process undertaken in this phase of the research is provided in Figure 7.1. This section begins with an overview of the methodology with footnoted references to the twenty-one methods (M27 through M47) found in Figure 7.1. The findings are then reported in the following three sub-sections on the relevant variations (i.e. Sections 7.1.1 through 7.1.3), with conclusions, comparisons and contrasting results provided at the end of each sub-section. Finally, the relevant research question and sub-questions are answered in Section 7.2, thus concluding the deductive process in evaluating the equity effects from increased neutrality and the decomposition of the subsidies.

The US and UK simulations under the existing respective tax systems reported in Chapters 5 and 6 are hereafter referred to as the *baseline (BL)* simulations. Three alternative scenarios (i.e. variations) of increasing levels of neutrality are analysed and compared with the baseline in this section. In the first variation (V1), the mortgage interest reliefs are removed from the simulations reflecting the generally

accepted tax principles in the UK and the US.²²¹ Then an imputed rental income is included in the income tax calculations in the second variation (V2) to satisfy tenure neutrality.²²² In the third and final variation (V3), imputed rental income and capital gains are considered taxable, satisfying tax neutrality.²²³ The reader is referred to Section 4.6 of Chapter 4 (Methodology) for a full discussion of the methodology used for this analysis.

The variations only affect income taxes and/or capital gains taxes with corresponding overall tax effects. Acquisition taxes and property taxes are not affected and therefore do not warrant further discussion in this chapter.

Overview of the methodology (horizontal equity analysis: M30-M33, M44 and M46)

An initial comparison is made between the original (baseline) simulation's overall tax obligations and the recalculated obligations as determined by the respective alternative scenarios.²²⁴ This quantifies the absolute amount of the tax subsidy associated with the element of favouritism for which the alternative is correcting.

The modified income tax and/or capital gains tax obligations for the homeowner occupiers are then compared with the original simulation results for the alternative investors and tenant / landlords to establish improvements in or hindrances to horizontal equity at each stepped improvement in neutrality.²²⁵ As is done in Chapter 5 (An evaluation of horizontal equity), each comparison is categorized as horizontally equitable, inequitable favouring the homeowner occupier or inequitable favouring the other investor.²²⁶ These qualitative characteristics are summarised in terms of frequencies (occurrences) in tables depicting the baseline tallies and the tallies as determined by the modified simulations. This approach is based on the methodology Johnson and Mayer (1962). The analysis is then extended to quantifying the inequities in monetary (absolute) terms by summarising the differences in cumulative tax obligations.²²⁷ This approach is based on the methodology established by Berliant and Strauss (1983). The time value of money

²²¹ The reader is referred to M27 of Figure 7.1.

²²² The reader is referred to M28 of Figure 7.1.

²²³ The reader is referred to M29 of Figure 7.1.

²²⁴ The reader is referred to M30 of Figure 7.1.

²²⁵ The reader is referred to M31 of Figure 7.1.

²²⁶ The reader is referred to M32 of Figure 7.1.

²²⁷ The reader is referred to M33 of Figure 7.1.

is considered with the differences being represented by current and constant monetary terms.

The *within-country* analysis (Maylor and Blackmon, 2005) is then conducted where the results from one set of pairs (i.e. the homeowner occupiers and the alternative investors) are compared with the other set of pairs (i.e. the homeowner occupiers and the tenant / landlords).²²⁸ The *cross-country* analysis (Maylor and Blackmon, 2005) completes the horizontal analyses by comparing the results from one country (e.g. the differentials between the UK homeowner occupiers and alternative investors) with the other country (e.g. the differentials between the US homeowner occupiers and alternative investors).²²⁹

Overview of the methodology (vertical equity analysis: M34-M43, M45 and M47)

Consistent with the methodology established in Chapter 6 (An evaluation of vertical equity), three structural indices and one distributional index are used to measure the progression of the modified results of the homeowner occupiers.

The Average Rate Progression (ARP)²³⁰, Marginal Rate Progression (MRP)²³¹ and the Liability Progression (LP)²³² indices established by Pigou (1928) and Musgrave and Thin (1948) measure progression between the successive levels of income. By using the data at the two extremes (i.e. US-H½ and US-H5), an overall measure of structural progression specific to the respective countries' studies is also provided. Finally, the structural indices are calculated on cumulative income, the results of which are compared with the results from the original (baseline) simulation to determine whether progressivity has improved or been hindered by the respective modifications for neutrality.²³³ Further, the differences between the baseline indices and the modified indices reflect the changes in progressivity as a result of the respective tax subsidies.²³⁴

²²⁸ The reader is referred to M44 of Figure 7.1.

²²⁹ The reader is referred to M46 of Figure 7.1.

²³⁰ The reader is referred to M34 of Figure 7.1.

²³¹ The reader is referred to M35 of Figure 7.1.

²³² The reader is referred to M36 of Figure 7.1.

²³³ The reader is referred to M38 of Figure 7.1.

²³⁴ The reader is referred to M39 of Figure 7.1.

The Suits index is also calculated for each year with respect to the modified income taxation and the year of disposal with respect to capital gains taxation.²³⁵ It is next calculated in the cumulative income and tax data with regard to the income taxation of each country, the results of which are compared with the baseline simulations' results identifying the amount of progression associated with each specific tax subsidy.²³⁶ Finally, the Suits indices for the respective overall tax systems in the UK and the US are determined based on the weighted average of the specific S indices for the homeowner occupiers under each of the three modifications for neutrality.²³⁷ These results are compared with the results at each successive level of neutrality (e.g. V1 with baseline, V2 with V1, and V3 with V2) to establish each of the relevant tax subsidies' associated effect on the progressivity of the overall tax systems.²³⁸

The orders of progression are re-evaluated based on the impact of each respective modification to the taxation of the homeowner occupiers. These are done on a within-country²³⁹ and cross-country²⁴⁰ basis.

7.1.1. 1st Variation (V1): removal of mortgage interest relief

The first variation to the original simulations is to remove the mortgage interest relief from the income tax calculations. The purpose of this variation is to remove an obvious tax distortion in the income tax systems and to consider tax systems more in line with the generally accepted principles in each country.

Horizontal Equity

United Kingdom

A common difference in income tax liabilities between the homeowner occupiers (UK-H) and the alternative investors (UK-A and UK-TL) is the impact from Mortgage Interest Relief at Source (MIRAS). In the original (*baseline*) simulation of the existing UK tax system for the study period 1990/91 through 2009/10,

²³⁵ The reader is referred to M37 of Figure 7.1.

²³⁶ The reader is referred to M41 of Figure 7.1.

²³⁷ The reader is referred to M42 of Figure 7.1.

²³⁸ The reader is referred to M43 of Figure 7.1.

²³⁹ The reader is referred to M45 of Figure 7.1.

²⁴⁰ The reader is referred to M47 of Figure 7.1.

Mortgage Interest Relief at Source (MIRAS) benefits all homeowner occupiers, regardless of their level of income and investment, until its abolition in 1999/2000. The effect of this policy in the context of the study is horizontal inequities favouring homeowners from 1990/91 to 1999/00 when compared with alternative investors and tenant / landlords. The first variation (V1) to the UK baseline simulation is to remove MIRAS from the income tax calculations. Table 7.1 compares the overall tax obligations of homeowner occupiers as determined within the baseline and V1 simulations depicting the differences in current and constant monetary terms. The differences reflect the £24,459 MIRAS benefits received by homeowners during the study.

Table 7.1 A comparison of the overall tax obligations of UK homeowners under the baseline and V1 simulations

Income Multiples	Homeowners (BL) ²⁴¹	Homeowners (V1)	Differences (Current £)	Differences (Constant £)
1/2	£18,359	£21,136	-£2,777	-£4,490
1	64,326	69,226	-4,900	-7,924
2	162,938	168,532	-5,594	-9,140
4	464,712	470,306	-5,594	-9,140
5	611,312	616,906	-5,594	-9,140
Cumulative	<u>£1,321,647</u>	<u>£1,346,106</u>	<u>-£24,459</u>	<u>-£39,834</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 405-410.

With the removal of MIRAS, the result is complete horizontal equity between homeowners and alternative investors (UK-A) under V1 for the entire period of study as the only tax variation between the two investors is the mortgage interest relief. This is reflected in Table 7.2 where the total income tax obligations for UK homeowners and alternative investors are summarised with no differences noted.

²⁴¹ With reference to Table 5.26 of Chapter 5 (An evaluation of horizontal equity)

Table 7.2 Differences in cumulative income tax obligations under V1 between UK homeowners and alternative investors in current and constant monetary terms

Income Multiples	Homeowners (V1)	Alternative Investor ²⁴²	Differences (Current £)	Differences (Constant £)
1/2	£11,662	£11,662	£0	£0
1	£57,897	57,897	0	0
2	£153,919	153,919	0	0
4	£446,269	446,269	0	0
5	592,444	592,444	0	0
Cumulative	<u>£1,262,191</u>	<u>£1,262,191</u>	<u>£0</u>	<u>£0</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 405-410.

This is not the situation however when the analysis turns to the UK tenant / landlords. In addition to the inequities imposed by MIRAS, the income tax treatment between the homeowner occupiers and the tenant/landlords differs in that the homeowner occupiers do not recognise imputed rental income whereas landlords are taxed on net rental income.

The UK baseline simulation resulted in rental losses in the first three years of activity, followed by net rental income from 1993/94 onwards. The ring fencing of the initial rental losses suspended the recognition of rental income until 2002/03. The horizontal inequities from increased taxable income for the tenant / landlords are therefore delayed until that time.

In summary, in the first twelve years of the study under V1, when the tenant / landlords realise losses on their rental activities or are using past losses to offset their rental income, the result is horizontal equity with homeowner occupiers, regardless of the level of income and investment. In the last eight years, when the tenant / landlords realise net rental income, horizontal inequities favouring the homeowner occupier are noted.

²⁴² With reference to Table 5.7 of Chapter 5 (An evaluation of horizontal equity)

On comparing the income tax obligations of UK homeowners and tenant / landlords under the V1 simulation, the current cumulative difference of £39,800 reflects the additional income tax incurred by the tenant / landlords as a result of the net rental income recognised in the last eight years of study. This data is summarised in Table 7.3 including the constant monetary values.

Table 7.3 Differences in cumulative income tax obligations under V1 between UK homeowners and tenant / landlords in current and constant monetary terms

Income Multiples	Homeowner (V1)	Tenant Landlords ²⁴³	Differences (Current \$)	Differences (Constant \$)
½	£11,662	£12,541	-£879	-£956
1	57,897	59,656	-1,759	-1,913
2	153,919	160,537	-6,618	-7,183
4	446,269	459,617	-13,348	-14,479
5	<u>592,444</u>	<u>609,640</u>	<u>-17,196</u>	<u>-18,541</u>
Cumulative	<u>£1,262,191</u>	<u>£1,301,991</u>	<u>-£39,800</u>	<u>-£43,072</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 405-410.

Table 7.4 depicts the occurrences of horizontal equities and inequities for the UK homeowner occupiers with the respective alternative investors and tenant / landlords under the baseline and V1 simulations. The reader is reminded, given the five multiples of income and the twenty-year period studied, the total number of equity occurrences is one hundred.

²⁴³ With reference to Table 5.9 of Chapter 5 (An evaluation of horizontal equity)

Table 7.4 Comparison of UK baseline and V1 equity frequencies (income taxes) for homeowners and other investors

Investor	Simulations	Horizontal Equity	Horizontal Inequity (favouring the homeowner)	Horizontal Inequity (favouring the other investor)
Alternative Investor	Baseline (BL) ²⁴⁴	50	50	0
	Without MIRAS (V1)	100	0	0
Tenant / Landlord	Baseline (BL) ²⁴⁵	10	90	0
	Without MIRAS (V1)	60	40	0

Source: Worksheets VI (Horizontal Analysis), AB-AD136.

United States

In the original simulation of the existing US tax system for the study period 1990 through 2009 (*baseline*), homeowner occupiers are able to deduct qualified mortgage interest if they chose to itemize their deductions (i.e. their itemized deductions exceeded the statutory standard deduction). The first variation (V1) to the US baseline simulation is to remove mortgage interest from the itemized deductions

²⁴⁴ With reference to Table 5.6 of Chapter 5 (An evaluation of horizontal equity)

²⁴⁵ With reference to Table 5.6 of Chapter 5 (An evaluation of horizontal equity)

used in the income tax calculations. Table 7.5 compares the overall tax obligations of homeowner occupiers as determined within the baseline and V1 simulations depicting the differences in current and constant monetary terms. The current differences reflect a cumulative \$273,351 in mortgage interest subsidies received by homeowners during the study.

Table 7.5 A comparison of the overall tax obligations of US homeowners under the baseline and V1 simulations

Income Multiples	Homeowners (BL) ²⁴⁶	Homeowners (V1)	Differences (Current \$)	Differences (Constant \$)
1/2	\$14,632	\$14,632	\$0	\$0
1	82,061	82,642	-581	-979
2	235,371	262,361	-26,990	-39,294
4	664,871	765,405	-100,534	-137,862
5	906,406	1,051,652	-145,246	-199,195
Cumulative	<u>\$1,903,341</u>	<u>\$2,176,692</u>	<u>-\$273,351</u>	<u>-\$377,330</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 441 – 446.

Not all case families benefit from this deduction as Table 7.5 indicates.²⁴⁷ The lowest tiered homeowner occupier (US-H½) do not itemize in any year under the baseline simulation and the second lowest (US-H1) itemizes only in the first six years (1990-1995).

With the removal of the mortgage interest expense from eligible itemized deductions under V1 the result is more case families simply claiming the standard deductions. The first three levels of income and investment homeowners (US-H½, US-H1 and US-H2) only claim the standard deductions throughout the study. The second to highest income earner and investor (US-H4) itemizes in four years of the study. The highest level of income and investment homeowner (US-H5) itemizes in fourteen years. In addition to these eighteen occurrences of horizontal inequity, all homeowners benefit from higher standard deductions in 2008 and 2009 as a result of the provision introduced in 2008 for real estate taxes incurred²⁴⁸. In total, there are

²⁴⁶ With reference to Table 5.29 of Chapter 5 (An evaluation of horizontal equity)

²⁴⁷ The reader is referred to Section 3.2.1 of Chapter 3 and Section 5.1.3 of Chapter 5 for a full explanation of this benefit.

²⁴⁸ The reader is referred to Section 3.2.2 of Chapter 3 (Country Summaries) for a complete explanation of this provision.

27 occurrences of inequities in the income tax system favouring the homeowner occupiers under V1.

The monetary values of these horizontal inequities between homeowners and alternative investors are quantified in Table 7.6. The cumulative current difference of \$25,627 depicted in Table 7.6 is largely attributed to the alternative minimum taxes (AMT) incurred by the higher-tiered alternative investors (US-A4 and US-A5), which totals \$19,724. The US allowance of deductions in excess of the statutory standard deductions, including real estate taxes paid, accounts for \$6,494 of the difference. The remaining difference of \$591 is the AMT paid by the highest-tiered homeowner (US-H5) in the last simulated year.

Table 7.6 Differences in cumulative income tax obligations under V1 between US homeowners and alternative investors in current and constant monetary terms

Income Multiples	Homeowners (V1)	Alternative Investor ²⁴⁹	Differences (Current \$)	Differences (Constant \$)
1/2	\$2,386	\$2,481	-\$95	-\$97
1	56,972	57,272	-300	-305
2	211,021	211,521	-500	-508
4	662,725	670,813	-8,088	-8,300
5	<u>923,302</u>	<u>939,946</u>	<u>-16,644</u>	<u>-18,095</u>
Cumulative	<u>\$1,856,406</u>	<u>\$1,882,033</u>	<u>-\$25,627</u>	<u>-\$27,305</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 441 – 446.

With regard to the US tenant / landlords, the simulation resulted in rental losses in the first 12 years of activity, followed by net rental income from 2003 onwards. The rental losses for the lower tiers (US-TL½, US-TL1 and US-TL2) are recognised (i.e. allowed) in the years incurred by offsetting general income. However, as the middle tiered homeowner occupier (US-H2) benefit from itemizing deductions in the original (baseline) simulation, the end result is 24 occurrences of horizontal inequity favouring the tenant / landlords, which are entirely attributed to the two lowest tiered investors (US-TL½ and US-TL1) in the first twelve years of the study.

With regard to the higher case families (US-TL4 and US-TL5), the passive activity rules apply in both the baseline and V1 simulations as modified adjusted gross

²⁴⁹ With reference to Table 5.12 of Chapter 5 (An evaluation of horizontal equity)

income exceeded \$100,000. Therefore, the losses are either partially or wholly suspended, depending on the level of excessive modified adjusted gross income. As the higher tiered homeowner occupiers (US-H4 and US-H5) itemize deductions in the baseline simulation, the horizontal inequity always favours the homeowners.

To summarise the baseline equity comparisons of the homeowner occupiers, there are 24 occurrence of inequity favouring the tenant / landlords and all other 76 occurrences point towards horizontal inequities favouring the homeowner occupiers.

The removal of the mortgage interest deduction which results in fewer homeowner occupier case families benefitting from itemizing deductions impact the horizontal equity status between homeowner occupiers and tenant / landlords. In addition to the first two tiers of tenant / landlords (US-TL $\frac{1}{2}$ and US-TL-1), the middle range tenant / landlord (US-TL2) also have lower income tax obligations in the first twelve years of the study when losses are recognised and the respective homeowner occupiers no longer itemize deductions. Once the tenant / landlords realise net rental income, the horizontal inequities favour the homeowners.

The second to highest income earner and investor in real estate (US-TL4) also showed inequities favouring them until 1998 when their modified adjusted gross income exceeds \$150,000 and their losses are no longer allowed under the passive activity loss rules. In 1998 and 1999 the homeowners at this level (US-H4) do not itemize their deductions and therefore the result is horizontal equity between the two for those two years. From 2000 through 2002, the homeowners itemize while the tenant / landlords are unable to recognise their rental losses resulting in inequities favouring the homeowner occupiers. From 2003 onwards, the tenant / landlords at this level fall under the alternative minimum tax regime, thus realising higher tax liabilities than the homeowners.

With regard to the highest income earner and investor in real estate (US-TL5), with the exception of two years (1997 and 1998) in which their counter-investor homeowner occupier (US-H5) does not itemize deductions, all other years' results are inequities favouring the homeowner occupiers as the rental losses are disallowed or limited to subsequent rental income realised from 2003 onwards. Furthermore, this case family is heavily hit with alternative minimum tax from 2003.

The horizontal inequities between the US homeowner occupiers and the tenant / landlords are quantified and summarised in Table 7.7. With the exception of the highest tiered tenant / landlord (US-TL5), the lower tax liabilities realised by the tenant / landlords in the table below reflect their abilities to reduce their tax liabilities by their rental losses, thus resulting in lower tax burdens when compared with the homeowner occupiers. While the highest tiered homeowner (US-H5) itemizes deductions in fourteen of the twenty years of study, the highest tiered tenant / landlord (US-TL5) never realises rental losses and falls victim to the alternative minimum tax in the later years. The end result is a cumulative difference in income tax liabilities of \$5,437 in favour of the homeowner occupier (US-H5).

Table 7.7 Differences in cumulative income tax obligations under V1 between US homeowners and tenant / landlords in current and constant monetary terms

Income Multiples	Homeowner (V1)	Tenant Landlords ²⁵⁰	Differences (Current \$)	Differences (Constant \$)
1/2	\$2,386	\$1,455	\$931	1,676
1	56,972	54,857	2,115	4,056
2	211,021	203,202	7,819	15,094
4	662,725	649,097	13,628	25,622
5	<u>923,302</u>	<u>928,739</u>	<u>-5,437</u>	<u>-7,774</u>
Cumulative	<u>\$1,856,406</u>	<u>\$1,837,350</u>	<u>\$19,056</u>	<u>\$38,674</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 441 – 446.

The occurrences of horizontal equities and inequities for the US homeowner occupiers with the respective alternative investors and tenant / landlords under the baseline and V1 simulations are summarised in Table 7.8.

²⁵⁰ With reference to Table 5.14 in Chapter 5 (An evaluation of horizontal equity).

Table 7.8 Comparison of US baseline and V1 equity frequencies (income taxes) for homeowners and other investors

Investor	Simulations	Horizontal Equity	Horizontal Inequity (favouring the homeowner)	Horizontal Inequity (favouring the other investor)
Alternative Investor	Baseline (BL) ²⁵¹	30	70	0
	Without Mortgage interest (V1)	73	27	0
Tenant / Landlord	Baseline (BL) ²⁵²	0	74	26
	Without Mortgage interest (V1)	4	49	47

Source: Worksheets VI (Horizontal Analysis), AB-AD136.

Conclusions, comparisons and contrasting results

The UK income tax subsidy from mortgage interest relief before MIRAS was abolished was fairly insignificant when compared with the subsidy still allowed in the US today. The ten years' mortgage relief in the UK simulation amounted to

²⁵¹ With reference to Table 5.6 of Chapter 5 (An evaluation of horizontal equity)

²⁵² With reference to Table 5.6 of Chapter 5 (An evaluation of horizontal equity)

£24,459 in income tax subsidies for the five case families considered. The twenty years' mortgage interest relief in the US simulation amounted to \$273,351 in income tax subsidies for the five case families considered.

The mortgage interest relief is the only variation between the UK homeowner occupiers and the alternative investors. The removal of it from the original simulation results in complete horizontal equity between the two investors for the entire period of study. Conversely, while mortgage interest relief is certainly significant to the US homeowner occupiers, it is not the only variation between such investors and alternative investors at the higher levels of income and investment. Property taxes, coupled with state income taxes and other deductible expenses may exceed the statutory standard deduction, thus creating a wedge between homeowner occupiers and alternative investors in the US. The cumulative difference between the US homeowner occupiers and the alternative investors as a result of the other itemized deductions excluding mortgage interest is \$6,494.

While a significant difference between homeowner occupiers and tenant / landlords in both countries, the removal of the respective mortgage interest reliefs does not ensure horizontal equity in either income tax system. A wedge still exists because of the realisation and recognition of net rental income and/or losses. The UK does not allow net rental losses to offset general income, therefore horizontal inequities favouring the UK homeowner occupiers exist in years in which net rental income is realised and recognised by the UK tenant / landlords. The US allows a limited level of net rental losses to offset general income with regard to the passive activity loss rules. The higher tiered US tenant / landlords in this study are partially or wholly unable to utilise rental losses against general income while the respective homeowner occupiers itemize their other deductions (i.e. excluding mortgage interest). Conversely, the lower tiered US tenant / landlords are able to recognise losses while the respective homeowner occupiers are unable to itemized other deductions. The former results in horizontal inequities favouring the homeowner occupiers, whereas the latter results in horizontal inequities favouring the tenant / landlords. The net effect is a cumulative \$19,056 in higher income tax obligations for US homeowner occupiers, given the level of available net rental losses for the tenant / landlords. This is contrasted with the cumulative £39,800 in lower income

tax obligations for the UK homeowner occupiers as a result of net rental income being taxed by the tenant / landlords.

Vertical Equity

United Kingdom

The vertical equity effect from removing MIRAS under V1 is a decrease in the progressivity of the UK income tax system. This is established through structural and distributional progression analyses.

For the first half of the study period affected by the removal of MIRAS and for each level of investment analysed, the homeowners' Average Rate Progression (ARP) indices all decrease from the baseline ARP indices.

Under V1, the ARP indices are the same between the homeowners and alternative investors throughout the period studied as they yield the same tax liabilities on the same incomes. The homeowners and tenant landlords have the same ARP indices until 2002/03 when the net rental income of the tenant / landlords are realised in the last eight years of the study. The ARP indices for the tenant / landlords are less than those of the homeowner occupiers in that period.

As in the baseline simulation, the greatest rate change in the progression of annual income taxation as detected by the ARP indices under V1 is between the two lowest levels of income and investment (UK-½ and UK-1). Thereafter the degrees of progression diminish at each subsequent level of income and investment with the few exceptions noted in Chapter 6 (An evaluation of vertical equity), Section 6.1.3 on page 254.

The results are the same with the analysis of the Marginal Rate Progression (MRP) indices in that the homeowners' affected indices all decreased from those calculated under the baseline simulation. The same conclusion being drawn: the removal of MIRAS under V1 has the effect of decreasing the progressivity of the income tax system with respect to the homeowners.

With regard to the Liability Progression (LP) indices, the conclusions are the same again: each index recalculated under V1 for the homeowners result in a smaller

index than those calculated under the baseline simulation. This confirms once more, the vertical equity effect from removing MIRAS is to decrease the progressivity of the income tax system.

A summary of the structural progressivity indices calculated under the UK baseline and V1 simulations is provided in Table 7.9.

Table 7.9 Comparison of the structural indices calculated under the UK baseline and V1 simulations

Structural indices	Baseline (BL)²⁵³ (Existing IT System)	Variation 1 (V1) (Without MIRAS)	Conclusions
Average Rate Progression (ARP)	1.65739E-07	1.58359E-07	Less progression
Marginal Rate Progression (MRP)	1.32826E-07	1.28138E-07	Less progression
Liability Progression (LP)	2.518312027	2.308145466	Less progression

Appendix V (Structural Progression Indices), pages 481, 486 and 491, respectively.

The final progression index to consider then is the Suits (S) index. Once again, on comparing the annual indices calculated in the baseline simulation with the recalculated indices under V1, the progressivity of the income tax system decreases during the affected years. The S indices for the income tax system based on the twenty years of cumulative income for the baseline and V1 simulations are 0.1270²⁵⁴ and 0.1186²⁵⁵, respectively. The difference between the two indices yields the S Index for the MIRAS subsidy of -0.0084 with regard to income taxation. This variation corresponds with the findings in Chapter 6 where the difference between the S indices of the homeowner occupiers (as determined under the baseline simulation) and the alternative investors is the same -0.0084²⁵⁶ as the only difference between the two investors is the MIRAS benefit. Similarly, the difference between

²⁵³ The reader is referred to Table 6.5 of Chapter 6 (An evaluation of vertical equity).

²⁵⁴ The reader is referred to Table 6.11 of Chapter 6 (An evaluation of vertical equity).

²⁵⁵ Appendix V (Overall Measures of Progressivity), page 511.

²⁵⁶ The reader is referred to Table 6.13 of Chapter 6 (An evaluation of vertical equity) for the S index for the income tax system with respect to the alternative investors (i.e. 0.1186).

the ARP indices calculated for the homeowner occupiers under the baseline and V1 simulations listed in Table 7.9 is -7.38056E-09, which corresponds with the variation in ARP indices between the homeowner occupiers (baseline) and alternative investors as per Table 6.5 in Chapter 6 (An evaluation of vertical equity). These negative index differences represent the degree of progression of the MIRAS benefit itself and are confirmation of their regressive distribution.

The vertical equity impact on the *overall* UK tax system from removing the MIRAS benefit is established through the combination of weighted averages of tax specific S indices. The baseline overall S index is 0.1071²⁵⁷ and the overall S index determined under V1 is 0.0997²⁵⁸; the difference of -0.0074 being entirely attributed to MIRAS benefit effect.

If a subsidy is distributed regressively as was the case with MIRAS, the effect is an increase in the progressivity of the system in which the subsidy is present. The regressivity of MIRAS is established through the structural progression indices calculated solely on the MIRAS benefits and the distributional index (Suits) variations as stated above. The vertical equity effect of removing the subsidy decreased the progressivity of the UK income tax system. This correlation is demonstrated again when the US income tax system is analysed.

United States

The impact on vertical equity resulting from removing mortgage interest relief from the US income tax system is to increase progressivity.

The Average Rate Progression (ARP) indices recalculated under the V1 simulation exceeded those calculated under the baseline simulation, for all twenty years and at all five levels income and investment. The removal of the mortgage interest relief does not change the overall determination of the income tax system in that the ARP indices consistently registered as progressive.

The ARP indices determining the degree of progressivity from the lowest (US-1/2) to the highest (US-5) levels of income and investment resulted in consistently lower

²⁵⁷ The reader is referred to Table 6.11 of Chapter 6 (An evaluation of vertical equity).

²⁵⁸ [Appendix V \(Overall Measures of Progressivity\)](#), page 509.

measures for homeowners (as per V1) than for the alternative investors and the tenant / landlords. While progressivity has improved, this is an indication of a less progressive income tax system for the homeowners for reasons other than simply the mortgage interest relief. Those reasons are the allowance of the real estate tax deduction combined with the absence of an imputed rental income.

As in the baseline simulation, the greatest rate change in the progression of annual income taxation as detected by the ARP indices under V1 is between the two lowest levels of income and investment (US-½ and US-1). Thereafter the degrees of progression diminish at each subsequent level of income and investment.

The majority of the Marginal Rate Progression (MRP) indices calculations yield greater results under V1 than under the baseline simulation. While there are some inconsistencies at various levels of investment for reasons particular to this computation, the MRP indices measuring the degree of progressivity from the lowest (US-½) to the highest (US-5) levels of income and investment result in consistently greater indices. The conclusion being that the income tax system increases in progressivity as a result of removing the mortgage interest relief under V1.

The Liability Progression (LP) indices measuring the degree of progressivity from the median level of income and investment (US-1) to the highest level (US-5) result in consistently greater indices. The same conclusion being drawn: the US income tax system increases in progressivity with the removal of the mortgage interest relief under V1.

A summary of the structural progressivity indices calculated under the US baseline and V1 simulations is provided in Table 7.10.

Table 7.10 Comparison of the structural indices calculated under the US baseline and V1 simulations

Structural indices	Baseline (BL)²⁵⁹ (Existing IT system)	Variation 1 (V1) (w/o Mortgage Relief)	Conclusions
Average Rate Progression (ARP)	5.15837E-08	6.15179E-08	More progression
Marginal Rate Progression (MRP)	3.94528E-08	5.04432E-08	More progression
Liability Progression (LP)	3.199383661	3.801537543	More progression

Appendix V (Structural Progression Indices), pages 497, 502 and 507, respectively.

The difference between the ARP indices under the baseline and V1 simulations is 0.99342E-08, which is the portion of the difference between the homeowner occupiers under the baseline simulation and the alternative investors (1.03827E-08) that is entirely attributed to mortgage interest relief. The remaining 0.04485E-08 relates to the real estate tax allowance for the homeowner occupiers.

With regard to the Suits (S) Index, the conclusions are the same: for each year of study the progression of the US income tax system increases with the removal of the mortgage interest relief under V1. One again, this is detectable by comparing the indices calculated in the baseline simulation with the recalculated indices under V1. The S indices for the income tax system based on the twenty years of cumulative income for the baseline and V1 simulations are 0.1512²⁶⁰ and 0.1604²⁶¹, respectively. The difference between the two indices yields the S index for mortgage interest relief in the US income tax system of 0.0092, a progressively distributed subsidy.

The vertical equity impact on the *overall* US tax system from removing the mortgage interest from eligible itemized deductions is established through the combination of weighted averages of tax specific Suits indices. The baseline overall Suits index is

²⁵⁹ The reader is referred to Table 6.7 of Chapter 6 (An evaluation of vertical equity).

²⁶⁰ The reader is referred to Table 6.15 of Chapter 6 (An evaluation of vertical equity).

²⁶¹ With reference to Appendix V (Overall Measures of Progressivity), page 519.

0.1260²⁶² and the overall Suits index determined under V1 is 0.1370²⁶³: the difference of 0.0110 being entirely attributed to the mortgage relief.

As the subsidy is distributed progressively among the population, the effect is to decrease the progressivity of the tax system in which it is present. By removing the subsidy, the income tax system increases in progressivity. This is established earlier on examining the impact from MIRAS under the UK tax system. As MIRAS was distributed regressively, the effect was to increase in the income tax progressivity. By removing it, the UK income tax system decreased in progressivity.

Conclusions, comparisons and contrasting results

The removal of the mortgage interest reliefs from the UK and the US income tax systems have different effects on progressivity. The UK income tax system becomes more progressive while the US income tax system becomes less progressive. This is conclusively established through structural and distributional analyses.

The reason for the different impacts is rooted in the distributive nature of the two allowances. MIRAS was limited in terms of indebtedness and in terms of marginal rates. Therefore, all but the lowest tiered homeowner occupier receives the same benefit throughout the period of study.²⁶⁴ This effectively makes the distribution of the benefit regressive which in turn makes the income tax system in which it is applicable, progressive. By removing the regressively distributed benefit from the UK income tax system, the effect is to reduce the system's progressivity.

Conversely, the US mortgage interest deduction benefits the wealthy more in that the limitation on indebtedness is set at such a high level it is ineffectual and the relief is given at marginal income tax rates. Further, as established in this study, lower tiered homeowner occupiers (US-H½ and US-H1) do not benefit from itemizing their deductions given the generous standard deduction. That being the case, the US mortgage interest relief is highly progressive as it is skewed heavily towards the wealthy. The impact from such an allowance is to reduce the progressivity of the

²⁶² The reader is referred to Table 6.15 of Chapter 6 (An evaluation of vertical equity).

²⁶³ With reference to Appendix V (Overall Measures of Progressivity), page 517.

²⁶⁴ There is the one exception of the initial year in which the rates are not capped and the median homeowner occupier has a lower benefit in comparison with the three higher tiered homeowner occupiers.

income tax system in which it operates. Therefore, the removal of the deduction under V1 resulted in a more progressive income system in comparison with the original (baseline) simulation.

Under the original (baseline) simulations, the order of progression, from the greatest to the least, as determined by the Suits indices is homeowners, tenant / landlords and alternative investors in the UK and alternative investors, tenant / landlords and homeowner occupiers in the US. The removal of mortgage interest relief from the respective income tax systems changes those orders. In the UK the homeowner occupiers and the alternative investors are matched in progressivity measures and are slightly below that of the tenant / landlords. The US alternative investors are still greatest, followed then by the homeowner occupiers and the tenant / landlords.

7.1.2. 2nd Variation (V2): taxation of imputed rental income

V2 introduces an imputed rental income into the income tax systems, thus satisfying tenure neutrality. This alternative scenario imputes a rental income as determined within the user cost framework with offsetting eligible expenses in accordance with the respective countries' tax regimes. As mortgage interest is considered deductible with respect to rental real estate activities in both countries, the mortgage interest relief is reinstated into this modified simulation but with respect to rental activity legislation and not principal residence allowance legislation.

Horizontal Equity

United Kingdom

The taxation of imputed rental income theoretically treats the homeowner occupiers the same as investors in rental real estate. Rental income is taxable as ordinary income in the UK, with the income tax rates applying. Losses from rental activities are ring-fenced and used to offset future income from the same property. On disposition, any unutilised losses are lost. It is reasonable to assume these rules would apply to the homeowner occupants should imputed rental income be taxed. Table 7.11 compares the overall tax obligations of homeowner occupiers as determined within the baseline and V2 simulations depicting the differences in current and constant monetary terms.

Table 7.11 A comparison of the overall tax obligations of UK homeowners under the baseline and V2 simulations

Income Multiples	Homeowners (BL) ²⁶⁵	Homeowners (V2)	Differences (Current £)	Differences (Constant £)
½	£18,359	£22,015	-£3,656	-£5,447
1	64,326	70,985	-6,659	-9,837
2	162,938	175,149	-12,211	-16,323
4	464,712	483,656	-18,944	-23,619
5	611,312	634,101	-22,789	-27,764
Cumulative	<u>£1,321,647</u>	<u>£1,385,906</u>	<u>-£64,259</u>	<u>-£82,990</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 417 – 422.

The current difference of £64,259 is a combination of the MIRAS benefits received by homeowner occupiers and the absence of an imputed rental income during the study. This may be decomposed to £24,459 and £39,800, respectively.

In the original (baseline) simulation, the horizontal inequity between the homeowners and alternative investors with regard to income taxation is entirely attributed to MIRAS. Therefore, horizontal equity is established when MIRAS is eliminated from the computations under V1. The inclusion of imputed rental income under V2 therefore, introduces horizontal inequities in the years in which net income is realised (i.e. the last eight years in the simulation). This is depicted in Table 7.12 where the income tax obligations for the alternative investors and the homeowner occupiers under the V2 simulations are summarised with the variations stated in current and constant monetary terms.

Table 7.12 Differences in cumulative income tax obligations under V2 between UK homeowners and alternative investors in current and constant monetary terms

Income Multiples	Homeowners (V2)	Alternative Investor ²⁶⁶	Differences (Current £)	Differences (Constant £)
1/2	£12,541	£11,662	£879	£956
1	59,656	57,897	1,759	1,913
2	160,537	153,919	6,618	7,183
4	459,617	446,269	13,348	14,481
5	609,640	592,444	17,196	18,539
Cumulative	<u>£1,301,991</u>	<u>£1,262,191</u>	<u>£39,800</u>	<u>£43,072</u>

²⁶⁵ With reference to Table 5.26 of Chapter 5 (An evaluation of horizontal equity)

²⁶⁶ With reference to Table 5.7 of Chapter 5 (An evaluation of horizontal equity)

The current difference of £39,800 reflects the cumulative excess income tax obligation from imputing rental income borne by the homeowner occupants.

The horizontal inequities between the homeowners and tenant / landlords are attributed to MIRAS in the first 10 years and taxable net rental income realised by the tenant / landlords in the last 8 years of the study. In other words, there are two years of horizontal equity (2000/01 and 2001/02) between homeowner occupiers and tenant / landlords when both MIRAS and net rental income are absent from the computations. With the removal of MIRAS under V1, twelve years of horizontal equity exists until net rental income is realised in the last eight years. With the assumed inclusion of an imputed rental income for the homeowner occupiers under V2, horizontal equity is realised throughout the entire study period with regard to income taxation. This is depicted in Table 7.13 where the tax obligations for homeowner occupiers and tenant / landlords are summarised with no differences noted.

Table 7.13 Differences in cumulative income tax obligations under V2 between UK homeowners and tenant / landlords in current and constant monetary terms

Income Multiples	Homeowner (V2)	Tenant Landlords ²⁶⁷	Differences (Current £)	Differences (Constant £)
1/2	£12,541	£12,541	£0	£0
1	59,656	59,656	0	0
2	160,537	160,537	0	0
4	459,617	459,617	0	0
5	<u>609,640</u>	<u>609,640</u>	<u>0</u>	<u>0</u>
Cumulative	<u>£1,301,991</u>	<u>£1,301,991</u>	<u>£0</u>	<u>£0</u>

However, there remains the inequity from capital gains taxation that is not alleviated under V2. This will be addressed with the next modification (V3).

Table 7.14 sets out the classifications of equity and inequities among the different investors with regard to the baseline, V1 and V2 simulations. As discussed above, the alternative investors are favoured in the last eight years at all levels of income

²⁶⁷ With reference to Table 5.9 of Chapter 5 (An evaluation of horizontal equity)

and investment (i.e. 40 occurrences of inequity favouring the alternative investor). Prior to that, there is horizontal equity between the homeowner occupiers and alternative investors as the imputed rental losses realised are not recognised due to the restriction in UK legislation (i.e. 60 occurrences of horizontal equity). There is complete horizontal equity with regard to income taxation between the homeowner occupiers and the tenant / landlords.

Table 7.14 Comparison of UK baseline and V2 equity frequencies (income taxes) for homeowners and other investors

Investor	Simulations	Horizontal Equity	Horizontal Inequity (favouring the homeowner)	Horizontal Inequity (favouring the other investor)
Alternative Investor	BL ²⁶⁸	50	50	0
	V1 ²⁶⁹	100	0	0
	V2 (with IR)	60	0	40
Tenant / Landlord	BL ²⁷⁰	10	90	0
	V1 ²⁷¹	60	40	0
	V2 (with IR)	100	0	0

Source: Worksheets VI (Horizontal Analysis), AB-AD136.

²⁶⁸ With reference to Table 5.6 of Chapter 5 (An evaluation of horizontal equity)

²⁶⁹ With reference to Table 7.4

²⁷⁰ With reference to Table 5.6 of Chapter 5 (An evaluation of horizontal equity)

²⁷¹ With reference to Table 7.4

United States

While the inclusion of imputed rental income in the income tax base theoretically treats homeowner occupiers like investors in rental real estate, there are two issues such treatment raises given the fact that investors in US real estate receive special tax concessions. Firstly, would homeowners be allowed to recognise the depreciation allowance available to investors in rental real estate? Such recognition often generates losses, particularly in the early years of ownership when interest expense is higher due to frontloading. Secondly, would the introduction of a policy intended to tax imputed rental *income* allow for loss provisions? Deductions related to an *activity not for profit* in US legislation are limited to the income generated by the activity and then only available if the taxpayer(s) itemize their deductions. Under the personal use of dwelling units (including vacation homes) rules, rental expenses are limited to the rental income. Conversely, an active²⁷² investor in US rental real estate is able to recognise losses generated by their rental activities. This recognition occurs immediately for lower income earners and investors or eventually if the passive activity loss rules²⁷³ apply.

In establishing the US alternative scenario (V2) intended to consider the tax impact of a tenure neutral system - one in which an imputed rental income is included in the homeowner occupiers' simulation - the following options are considered with respect to depreciation and loss recognition.

Depreciation Expense:

Option A – Depreciation is not an eligible expense to offset the imputed rental income.

Option B – Depreciation is allowed.

The assumption of a depreciation allowance is consistently supported in the literature. Poterba (1984 and 1991), Poterba and Sinai (2008), Dietz and Haurin

²⁷² The reader is referred to Section 3.2.2 of Chapter 3 (Country Summaries) for an explanation of active participation with regard to rental real estate.

²⁷³ The reader is referred to Section 3.2.2 of Chapter 3 (Country Summaries) for a full explanation of the passive activity loss rules.

(2003) among others acknowledge depreciation with regard to establishing the user cost of the homeowner. Therefore, Option B is assumed.

Rental Losses:

Option 1 - Deductible expenses (i.e. mortgage interest, real estate taxes, maintenance, etc.) are limited to the gross imputed rental income, thus precluding the recognition of losses. This is dependent on the taxpayer(s) itemizing their deductions. The treatment under Option 1 is consistent with the provisions relevant to activities not for profit.

Option 2 - Deductible expenses are allowed to the limit of gross imputed rental income but *not* dependent on the taxpayer(s) itemizing their deductions. As in Option 1, loss recognition is still precluded but the imputed income is significantly less or completely offset by eligible expenses. This is not consistent with any existing US legislation but it is consistent with the generally accepted concept of imputed rental income as established in Chapter 2 (Literature Review).

Option 3 – Allowable expenses could yield net losses that would be ring-fenced and available to offset future imputed rental income (i.e. the losses would be suspended and carried forward). This manner of income taxation is identical to the UK method discussed earlier, but not reflective of any existing US legislation on losses.

Option 4 – The losses would fall under IRC Section 469 with regard to the passive activity loss treatment. This would allow those with modified adjusted gross incomes (MAGI) less than \$100,000 full recognition up to \$25,000 of losses. There would be a phase-out of this allowance between \$100,000 and \$150,000 of MAGI and a disallowance of the immediate recognition of losses when MAGI exceeds \$150,000.

The analysis under V2 assumes Options B and 4 providing equal treatment for homeowner occupiers in allowing for depreciation and losses under the passive loss rules. This ensures consistency with the tax treatment of rental real estate investments, which is the theoretical framework in which imputed rental income is set.

Table 7.15 summarises the overall tax obligations of US homeowner occupiers as determined under the simulation for the existing tax regime (baseline) and the simulation including the imputed rental income (V2). The cumulative difference of \$265,463 in current monetary terms may be decomposed to its two specific subsidies: \$273,351 in mortgage interest relief and \$7,888 in income tax associated with the unreported net imputed rental losses.

Table 7.15 A comparison of the overall tax obligations of US homeowners under the baseline and V2 simulations

Income Multiples	Homeowners (BL) ²⁷⁴	Homeowners (V2)	Differences (Current \$)	Differences (Constant \$)
½	\$14,632	\$13,701	\$931	\$1,676
1	82,061	80,527	1,534	3,077
2	235,371	253,380	-18,009	-23,038
4	664,871	752,181	-87,310	-112,643
5	<u>906,406</u>	<u>1,069,015</u>	<u>-162,609</u>	<u>-218,895</u>
Cumulative	<u>\$1,903,341</u>	<u>\$2,168,804</u>	<u>-\$265,463</u>	<u>-\$349,823</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 453 – 458.

The horizontal equity effect from including an imputed rental income in the US income tax calculations under V2 with regard to homeowner occupiers and tenant / landlords is reflected in a comparison of income tax obligations, the results provided in Table 7.16. As the table reflects, there is complete horizontal equity between US homeowner occupiers and tenant / landlords under V2 with regard to income taxation for the two lower levels of income and investment.

Table 7.16 Differences in cumulative income tax obligations under V2 between US homeowners and tenant / landlords in current and constant monetary terms

Income Multiples	Homeowner Occupiers ²⁷⁵	Tenant Landlords ²⁷⁶	Absolute Tax Differentials	Differentials in Present Value
½	\$1,455	\$1,455	\$0	\$0
1	54,857	54,857	0	0
2	202,040	203,202	-1,162	-1,162
4	649,500	649,097	403	403
5	<u>940,665</u>	<u>928,739</u>	<u>11,926</u>	<u>11,926</u>
Cumulative	<u>\$1,848,517</u>	<u>\$1,837,350</u>	<u>\$11,167</u>	<u>\$11,167</u>

²⁷⁴ With reference to Table 5.28 of Chapter 5 (An evaluation of horizontal equity)

²⁷⁵ Appendix V (Summary of Specific and Overall Taxes), pages 453 – 458.

²⁷⁶ With reference to Table 5.14 of Chapter 5 (An evaluation of horizontal equity)

The remaining differences are attributed to the impact on the income taxation of the higher tiered tenant / landlords from the dispositions of their rental properties in 2009. The tenant / landlords twice the median income and investment (US-TL2) has a restriction on their personal allowances as a result of their high income in 2009 which includes the capital gain from the sale of their rental property. The end result is a slightly higher income tax obligation in comparison with the respective homeowner occupier (US-H2). The two higher tiered tenant / landlords (US-TL4 and US-TL5) are able to reduce their 2009 general income by the suspended rental losses, thus establishing lower income tax obligations in comparison with the respective homeowner occupiers (US-H4 and US-H5). These remaining differences are addressed in the following section when capital gains taxation is considered under variation 3.

The introduction of an imputed rental income under the V2 simulation increases the horizontal inequities between the US homeowners and the alternative investors. The last seven years of the simulation, when net imputed rental income are realised, horizontal inequities favour the alternative investors at all five levels of income and investment. The first 13 years, in which net imputed rental losses are realised, the highest tiered homeowner occupier (US-H5) is unable to utilise any losses due to the passive activity loss restriction. In addition, between 1998 and 2003, the second highest tiered homeowner occupier (US-H4) is also unable to utilise losses.

In summary, there are 18 occurrences of inadvertent horizontal equity due to the passive loss restrictions, 35 occurrences of horizontal equity favouring the homeowner occupiers due to imputed rental loss recognition and the remaining 47 occurrences are of horizontal inequities favouring the alternative investors due to imputed rental income recognition. These results are summarised in Table 7.18. There is a cumulative current difference of \$25,627 between homeowner occupiers and alternative investors under V1 as depicted Table 7.6 as a result of the other itemized deductions recognised by the homeowner occupiers and the AMT incurred by the higher-tiered alternative investors. The further reduction to net cumulative

income taxation of \$7,888²⁷⁷ resulting from the inclusion of imputed net rental losses under V2 totals the current difference of \$33,515 as reflected in Table 7.17.

Table 7.17 Differences in cumulative income tax obligations under V2 between US homeowners and alternative investors in current and constant monetary terms

Income Multiples	Homeowners (V2)	Alternative Investors ²⁷⁸	Differences (Current \$)	Differences (Constant \$)
1/2	\$1,455	\$2,481	-\$1,026	-\$1,773
1	54,857	57,272	-2,415	-4,360
2	202,040	211,521	-9,480	-16,764
4	649,500	670,813	-21,313	-26,617
5	940,665	939,946	719	10,743
Cumulative	<u>\$1,848,517</u>	<u>\$1,882,033</u>	<u>-\$33,515</u>	<u>-\$38,771</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 453 – 458.

Table 7.18 Comparison of US baseline and V2 equity frequencies (income taxes) for homeowners and other investors

Investor	Simulations	Horizontal Equity	Horizontal Inequity (favouring the homeowner)	Horizontal Inequity (favouring the other investor)
Alternative Investor	BL ²⁷⁹	30	70	0
	V1 ²⁸⁰	73	27	0
	V2 (with IR)	18	47	35

²⁷⁷ This is included within the \$19,056 depicted in Table 7.7. The difference of \$11,167 has been explained with reference to Table 7.16

²⁷⁸ With reference to Table 5.12 of Chapter 5 (An evaluation of horizontal equity)

²⁷⁹ With reference to Table 5.6 of Chapter 5 (An evaluation of horizontal equity)

²⁸⁰ With reference to Table 7.8

Investor	Simulations	Horizontal Equity	Horizontal Inequity (favouring the homeowner)	Horizontal Inequity (favouring the other investor)
Tenant / Landlord	BL ²⁸¹	0	74	26
	V1 ²⁸²	4	49	47
	V2 (with IR)	97	1	2

Source: Worksheets VI (Horizontal Analysis), AB-AD136.

Conclusions, comparisons and contrasting results

The inclusion of imputed rental income in the respective income tax bases of the UK and US homeowner occupier case families creates horizontal inequities between the respective homeowner occupiers and alternative investors. Complete horizontal equity is achieved under V1 of the UK simulation, therefore the additional income realised by the homeowners creates a tax wedge favouring the alternative investors. The net rental losses initially realised by the UK case families do not create a wedge favouring the tenant / landlords as the losses are ring-fenced for use against future net rental income.

In the US simulation the inclusion of net rental income, and in certain circumstances the net losses, also creates income tax wedges between homeowner occupiers and alternative investors. Unlike the UK, all or some of the net rental losses realised by four of the five case families (US-H½, US-H1, US-H2 and US-H4) are used to reduce income tax liabilities in the years arising. Therefore, tax wedges occur during the years in which net imputed rental losses are realised as well as the years in which net imputed income is finally realised.

The inclusion of imputed rental income ensures complete horizontal equity between the homeowner occupiers and tenant / landlords with regard to the UK income tax

²⁸¹ With reference to Table 5.6 of Chapter 5 (An evaluation of horizontal equity)

²⁸² With reference to Table 7.8

system. Similarly, horizontal equity is achieved within the US income tax system if the same rules that apply to other investors in residential rental real estate are assumed in determining the imputed rental income or losses and the loss allowability. This is the situation in this study under V2 and complete horizontal equity is present in all years at all levels of income and investment with the exception of the last year in which the three higher tiered tenant / landlords present income tax differences as a result of the interplay between the US income tax system and the US capital gains tax system. These include the phasing out the personal exemptions for US-TL2 and passive activity loss realisations by US-TL4 and US-TL5.

The cumulative tax subsidy associated with the absence of net imputed rental income amounts to £39,800 under the UK income tax system with regard to the five case families' simulation over the twenty-year period. Conversely, four of the five US case families would further reduce their income tax obligations under a more neutral tax system that allows net imputed rental losses to be recognised in the same manner as other passive activity losses. These four case families (US-H½, US-H1, US-H2 and US-H4) would realise a combined \$25,251 less in income taxes with this provision. The highest tiered homeowner occupiers (US-H5) are unable to recognise their net imputed rental losses other than to offset future rental income and are subject to the alternative minimum tax. As a result, US-H5 would incur additional income taxation of \$17,363 under a more neutral income tax system. In conclusion, the cumulative tax *obligation* associated with the absence of net imputed rental losses in the US income tax system is therefore \$7,888 based on this study. While the inclusion of net imputed rental income in the UK income tax simulations of this study yields higher tax obligations for all five case families, the modified US income tax simulations identifies significant winners and losers from introducing such a provision. Without question, the taxation of imputed rental income would be a significant redistribution tool within the US income tax system as observed with the five case families.

Vertical Equity

United Kingdom

The vertical equity effect of including an imputed rental income in the income tax calculations within V2 is a further decrease in the annual progressivity of the income tax system. The reason for this decrease is explained in Chapter 6 with regard to the structural indices analysed for the tenant / landlords. In summary, as the rental income (and in the case of the homeowner occupiers herein, imputed rental income) is evenly split between working and non-working spouses, half of the income is offset by an otherwise unutilised personal allowance. The residual income is then taxed at the lower or basic rate of tax. This has a diluting effect on average tax rates and progression measurements.

The V2 ARP indices calculated for the homeowner occupiers at each level of income and investment are less than those calculated under the baseline simulation with a few exceptions. As expected, in the years 2000/01 and 2001/02, there are no differences in the APR indices. These are the two overlapping years in which net rental losses are realised and homeowners no longer claimed MIRAS. The other exception is in the last year of the study 2009/10, when the ARP index calculated for the lower levels of income and investment (UK-H1 and UK-H2) are greater under V2 when compared with the baseline. This is due to the positioning of UK-H2 within the higher rate band.

The results are varied with the analysis of the MRP indices in that the midrange homeowners' indices all decrease and the extreme ranges are more often greater than those calculated under the baseline simulation. The MRP measuring the progression for all families however, result in consistent decreases of index calculations. Furthermore, the MRP measuring the progression for all families using the cumulative income data for the whole period studied are less under V2 than under the baseline. The same conclusion being drawn: the addition of imputed rental income under V2 has the effect of decreasing the progressivity of the income tax system with respect to the homeowners.

With regard to the LP indices, except for the two aforementioned years (2000/01 and 2001/02) in which the results are equal, each index recalculated under V2 for the

homeowners result in a smaller index than those calculated under the baseline simulation. This confirms once more, the vertical equity effect from including an imputed rental income is to decrease the progressivity of the income tax system.

A summary of the structural progressivity indices calculated under the UK baseline, V1 and V2 simulations is provided in Table 7.19.

Table 7.19 Comparison of the structural indices for UK income taxation calculated under the baseline, V1 and V2 simulations

Structural indices	Baseline (BL) ²⁸³ (Existing IT system)	Variation 1 (V1) ²⁸⁴ (Without MIRAS)	Variation 2 (V2) (Introducing IRI)	Conclusions
Average Rate Progression (ARP)	1.65739E-07	1.58359E-07	1.47499E-07 ²⁸⁵	Decreasing progression
Marginal Rate Progression (MRP)	1.32826E-07	1.28138E-07	1.16595E-07	Decreasing progression
Liability Progression (LP)	2.518312027	2.308145466	2.304814777	Decreasing progression

Appendix V (Structural Progression Indices), pages 481, 486 and 491, respectively.

Finally, with regard to the Suits Index, on comparing the indices calculated in the baseline simulation with the recalculated indices under V2, the progressivity of the income tax system decreases during the affected years. The Suits indices for the income tax system based on the twenty years of cumulative income for the baseline and V2 simulations are 0.1270²⁸⁶ and 0.1169²⁸⁷, respectively. This leads one to conclude that the S index for the two subsidies (the presence of MIRAS and the absence of an imputed rental income) is -0.0101. This may be decomposed to -0.0084 for the presence of MIRAS (as established in Section 7.1.1) and -0.0017 for the absence of the imputed rental income.

²⁸³ The reader is referred to Table 6.5 of Chapter 6 (An evaluation of vertical equity).

²⁸⁴ The reader is referred to Table 7.9

²⁸⁵ This ARP index matches the one calculated for the tenant / landlords in the original simulation and the difference between this and the baseline ARP index for the homeowner occupiers equals -1.82408E-08, as per Subsidy Index (2) in Table 6.20.

²⁸⁶ The reader is referred to Table 6.11 of Chapter 6 (An evaluation of vertical equity).

²⁸⁷ Appendix V (Suits Indices), pages 512 – 513.

The vertical equity impact on the *overall* UK tax system from removing the MIRAS benefit and including an imputed rental income is established through the combination of weighted averages of tax specific S indices. The baseline overall S index is 0.1071²⁸⁸ and the overall S index determined under V2 is 0.0985²⁸⁹. The difference of -0.0086 between these two indices may be decomposed to -0.0074 being attributed to MIRAS (as established in Section 7.1.1) and -.0012 being attributed to the impact of the imputed rental income.

United States

The vertical equity effect of including an imputed rental income in the US income tax calculations within V2 is an increase in progressivity.

The annual ARP indices measuring the degrees of progressivity between the lowest (US-½) and the highest (US-5) levels of income and investment consistently result in greater indices under V2 as compared with both the baseline and V1 indices. On analysing the APR indices calculated at the incremental levels of income it is apparent that the mid-tier is in fact less progressive with the variation when compared to the progression indices calculated under V1. There are other variations, particularly in the later years of the study as a result of recognising rental income at the lower levels of income and investment. The conclusion overall however, is improved progression.

The MRP indices yield the same results in that all annual MRP indices recalculated for imputed rental income under V2 are greater than the MRP indices originally calculated (baseline) and recalculated under V1. Again, there are variations at the incremental levels noted as are noted under V1, but the measurement of the whole yields consistent results. In conclusion, there is improved progression noted with the transitions from the baseline to V1 and then again from V1 to V2 neutrality stages.

The LP indices yield the same results and conclusions: most of the annual LP indices recalculated for imputed rental income under V2 are greater than the LP indices originally calculated (baseline), as well as the LP indices recalculated under V1. The two exceptions are in 2008 and 2009 when the change from V1 to V2 results in less

²⁸⁸ The reader is referred to Table 6.11 of Chapter 6 (An evaluation of vertical equity).

²⁸⁹ Appendix V (Suits Indices), page 509.

progressive indices. The indication being that the US income tax system increases in generally progressivity as a result of included imputed rental income in the income tax computations; separate and distinctive from the removal of the mortgage interest relief under V1.

A summary of the structural progressivity indices calculated under the US baseline, V1 and V2 simulations is provided in Table 7.20. The vertical equity effect on the US income tax system is one of consistent improvement with increasing neutrality.

Table 7.20 Comparison of the structural indices calculated under the US baseline, V1 and V2 simulations

Structural indices	Baseline (BL) (Existing tax system) ²⁹⁰	Variation 1 (V1) (w/o Mortgage Relief) ²⁹¹	Variation 2 (V2) (with IRI)	Conclusions
Average Rate Progression (ARP)	5.15837E-08	6.15179E-08	6.5971E-08	Increasing progression
Marginal Rate Progression (MRP)	3.94528E-08	5.04432E-08	6.01225E-08	Increasing progression
Liability Progression (LP)	3.199383661	3.801537543	4.037630059	Increasing progression

Appendix V (Structural Progression Indices), pages 497, 502 and 507, respectively.

Finally, with regard to the Suits index, on comparing the indices calculated in the baseline simulation with the recalculated indices under V2, the progressivity of the income tax system increases, as the higher indices under V2 would indicate. On comparing the S indices under V2 and V1 conditions, all annual indices under V2 exceed those under V1. The S indices for the income tax system based on the twenty years of cumulative income for the baseline and V2 simulations are 0.1512²⁹² and 0.1719²⁹³, respectively. This leads one to conclude that the S index for the two subsidies (the presence of mortgage interest relief and the absence of an imputed rental income) is 0.0207. This may be decomposed to 0.0092 for the presence of

²⁹⁰ The reader is referred to Table 6.7 of Chapter 6 (An evaluation of vertical equity).

²⁹¹ The reader is referred to Table 7.10.

²⁹² The reader is referred to Table 6.15 of Chapter 6 (An evaluation of vertical equity).

²⁹³ Appendix V (Overall Measures of Progressivity), page 521.

mortgage interest relief (as established in Section 7.1.1) and 0.0115 for the absence of the imputed rental income.

The vertical equity impact on the *overall* US tax system from taxing imputed rental income is established through the combination of weighted averages of tax specific S indices. The baseline overall S index is 0.1260²⁹⁴ and the overall S index determined under V2 is 0.1468²⁹⁵. The difference of 0.0208 between these two indices may be decomposed to 0.0110 being attributed to mortgage interest relief (as established in Section 7.1.1) and 0.0098 being attributed to the impact of the imputed rental income.

Conclusions, comparisons and contrasting results

As with the results from the 1st variation (V1), the impact on the progressivity of the two income tax systems under the 2nd variation (V2) is different. The UK income tax system decreases in progression as a result of including the imputed rental income into the income tax base. Conversely, the US income tax system increases in progressivity. The reason for the contrasting results is due to the independent taxation within the UK and the legislative provisions within the US income tax system that are assumed in this modified simulation with regard to depreciation and passive activity losses.

The net imputed rental losses realised in the first three years of the UK modified simulation are “ring-fenced” and used to offset the subsequent imputed rental income realised by the homeowner occupiers under V2. The losses are fully absorbed by 2002/03 as is the situation with the UK tenant / landlords in the original simulation. Once income is realised, and given the assumption that working and nonworking spouses jointly earn such income, the recognition of the income is shared. This ensures a lower combined income tax obligation given the use of the nonworking spouse’s personal allowance and lower tax rates. This is an aspect of independent taxation that warrants consideration. The US income tax system allows married couples to minimise their tax obligations through joint filing, thus

²⁹⁴ The reader is referred to Table 6.15 of Chapter 6 (An evaluation of vertical equity).

²⁹⁵ [Appendix V \(Overall Measures of Progressivity\)](#), page 517.

combining personal exemptions, doubling the standard deduction and applying one set of income tax rates accordingly.

Given the generous income tax allowance for depreciation available to investors in rental real estate, the US homeowner occupiers within this study generate imputed rental losses until 2003. The ability to fully utilise these losses to offset general income is restricted to the lower tiered homeowner occupiers (US-H½, US-H1 and US-H2). The losses realised by the higher tiered families (US-H4 and US-H5) are partially or fully restricted under IRC Section 469. The results are lower cumulative income tax obligations under V2 at the first four levels of income and investment when compared with the revised income tax obligations under V1. The highest tiered homeowner occupier (US-H5) yields a higher cumulative income tax obligation under V2 in comparison with V1. This is because they are unable to offset general income with the net imputed rental losses, they lose the benefit of the real estate deduction due to reclassification, and they are then subjected to alternative minimum tax from 2003.

With regard to the orders of progression after the second modification, the homeowner occupiers are greatest in progression in both the UK and the US, followed by the tenant / landlords in the UK and the alternative investors in the US. This leaves the UK alternative investors and the US tenant / landlords measuring the least progression.

7.1.3. 3rd Variation (V3): taxation of capital gains

V3 introduces the taxation of capital gains realised by the homeowner occupiers into the simulation. This is the third and final alternative scenario considered and the one that is deemed the most neutral tax position.

Horizontal Equity

United Kingdom

Table 7.21 summarises the overall tax obligations for the homeowner occupiers under the baseline and V3 simulations depicting differences in current and constant monetary terms.

Table 7.21 A comparison of the overall tax obligations of UK homeowners under the baseline and V3 simulations

Income Multiples	Homeowners (BL) ²⁹⁶	Homeowners (V3)	Differences (Current £)	Differences (Constant £)
½	£18,359	£22,015	-£3,656	-£5,447
1	64,326	72,667	-8,341	-11,519
2	162,938	183,315	-20,377	-24,488
4	464,712	504,686	-39,974	-44,652
5	<u>611,312</u>	<u>661,300</u>	<u>-49,988</u>	<u>-54,877</u>
Cumulative	<u>£1,321,647</u>	<u>£1,443,983</u>	<u>-£122,336</u>	<u>-£140,983</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 429 – 434.

The current difference of £122,336 may be decomposed to the three specific subsidies it comprises: £24,459 in MIRAS benefits plus £39,800 from the absence of imputed rental income and £58,077 from the absence of capital gains taxation. These incremental differences are depicted in Table 7.22, where the overall tax obligations of the homeowner occupiers under all four simulations are summarised. At each level of improved neutrality, the homeowner occupiers incur more taxation.

Table 7.22 A comparison of the overall tax obligations of UK homeowners under the baseline, V1, V2 and V3 simulations

Income Multiples	Homeowners (BL) ²⁹⁷	Homeowners (V1) ²⁹⁸	Homeowners (V2) ²⁹⁹	Homeowners (V3) ³⁰⁰
1/2	£18,359	£21,136	£22,015	£22,015
1	64,326	69,226	70,985	72,667
2	162,938	168,532	175,149	183,315
4	464,712	470,306	483,656	504,686
5	<u>611,312</u>	<u>616,906</u>	<u>634,101</u>	<u>661,300</u>
Cumulative	<u>£1,321,647</u>	<u>£1,346,106</u>	<u>£1,385,906</u>	<u>£1,443,983</u>
Incremental Differences		<u>£24,459</u>	<u>£39,800</u>	<u>£58,077</u>

A proportional representation of the monetary information reflected in Table 7.22 is presented in Table 7.23. This clearly reflects the fact that the lower tiered case families are more disadvantaged from increased levels of neutrality in comparison

²⁹⁶ With reference to Table 5.26 of Chapter 5 (An evaluation of horizontal equity)

²⁹⁷ With reference to Table 5.26 of Chapter 5 (An evaluation of horizontal equity)

²⁹⁸ With reference to Table 7.1

²⁹⁹ With reference to Table 7.11

³⁰⁰ With reference to Table 7.21

with the higher tiered case families. To illustrate, the case family earning half the median income will incur a 19.9% increase in overall tax obligations under V2 as opposed to the 4.9% increase assumed by the case family earning five times the median income under the same scenario.

Table 7.23 Proportional analysis of the overall tax obligations of UK homeowners under the baseline, V1, V2 and V3 simulations where the respective homeowner obligations are set at 100%

Income Multiples	Homeowners (BL)	Homeowners (V1)	Homeowners (V2)	Homeowners (V3)
1/2	100%	115.1%	119.9%	119.9%
1	100%	107.6%	110.4%	113.0%
2	100%	103.4%	107.5%	112.5%
4	100%	101.2%	104.1%	108.6%
5	100%	100.9%	103.7%	108.2%
Cumulative	100%	101.9%	104.9%	109.3%
Incremental Differences		1.9%	3.0%	4.4%

Under the existing UK capital gains tax system, the capital gains realised on the property sales by the homeowner occupiers and the tenant / landlords are economically the same but the homeowners are fully exempt from capital gains taxation whereas the tenant / landlords are taxed at 18 per cent, net of the annual exemption of £10,100 applicable in 2009/10.

The gains realised by the alternative investors are significantly less than the homeowners and tenant / landlords due to the frontloading effect of property investment. Like the tenant / landlords, the gains realised by the alternative investors are taxable but, unlike them, entirely avoidable through tax planning as demonstrated in Chapter 5, Section 5.1.4. Therefore, horizontal equity inadvertently exists between the homeowner occupants and the alternative investors, as neither recognises a capital gains tax liability.

Bearing in mind the alternative investors are able to entirely avoid capital gains taxation, the proposition of capital gains taxation of the principal residence would introduce horizontal inequities between the homeowner occupiers and alternative investors. An exception to this inequity would be at the lowest levels of income and

investment as the dual annual exemptions more than offset the taxable gain for case family UK-H½, assuming the property is held jointly.

The capital gains tax obligations for the three types of investors in the UK are summarised in Table 7.24.

Table 7.24 Summary of the capital gains tax obligations under V3 for all three UK investors

Income Multiples	Homeowners (V3)	Tenant Landlords ³⁰¹	Alternative Investors ³⁰²
1/2	£0	£0	£0
1	1,682	1,682	0
2	8,166	8,166	0
4	21,031	21,031	0
5	<u>27,198</u>	<u>27,198</u>	<u>0</u>
Cumulative	<u>£58,077</u>	<u>£58,077</u>	<u>£0</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 429 – 434.

Table 7.25 summarises the differences in cumulative overall tax obligations between alternative investors and homeowner occupiers under V3. The variations are attributed to the sum of the acquisition taxes, the income taxes assessed on imputed rental income assumed under V2 and the capital gains taxation of the homeowner occupiers assumed under V3.

Table 7.25 Differences in cumulative overall tax obligations under V3 between UK homeowners and alternative investors in current and constant monetary terms

Income Multiples	Homeowners (V3)	Alternative Investors ³⁰³	Differences (Current £)	Differences (Constant £)
1/2	£22,015	£21,193	£822	869
1	72,667	68,915	£3,752	4,164
2	183,315	168,130	£15,185	16,187
4	504,686	469,664	£35,022	37,119
5	<u>661,300</u>	<u>616,105</u>	<u>£45,195</u>	<u>£47,829</u>
Cumulative	<u>£1,443,983</u>	<u>£1,344,007</u>	<u>£99,976</u>	<u>£106,168</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 429 – 434.

³⁰¹ With reference to Table 5.23 of Chapter 5 (An evaluation of horizontal equity)

³⁰² With reference to Table 5.23 of Chapter 5 (An evaluation of horizontal equity)

³⁰³ With reference to Table 5.26 of Chapter 5 (An evaluation of horizontal equity)

Complete horizontal equity would exist between the homeowners and the tenant / landlords with the taxation of imputed rental income and capital gains under this scenario. V3 eliminates all the differences in taxation between these two investors. The occurrences of horizontal equities and inequities are provided in Table 7.26 with respect to the baseline and V3 simulations.

Table 7.26 Comparison of UK baseline and V3 equity frequencies (capital gains taxes) for homeowners and other investors

Investor	Simulations	Horizontal Equity	Horizontal Inequity (favouring the homeowner)	Horizontal Inequity (favouring the other investor)
Alternative Investor	Baseline (BL) ³⁰⁴	5	0	0
	With CGT (V3)	1	0	4
Tenant / Landlord	Baseline (BL) ³⁰⁵	1	4	0
	With CGT (V3)	5	0	0

Source: Worksheets VI (Horizontal Analysis), AB-AD136.

United States

Under V3, the taxation of capital gains realised by the US homeowner occupiers are considered with respect to the current legislation applicable to US investors in rental real estate.

As the previous variation (V2) assumed the same tax treatment for the homeowner occupiers as with the investors is rental real estate with respect to imputed rental income and loss recognition, consideration for the unutilised rental losses on disposition is necessary under the 3rd variation. If the homeowner occupiers are to

³⁰⁴ With reference to Table 5.19 of Chapter 5 (An evaluation of horizontal equity)

³⁰⁵ With reference to Table 5.19 of Chapter 5 (An evaluation of horizontal equity)

continue to receive equal tax treatment, then the unutilised losses should be fully allowed in the year in which the property is disposed. To disallow such recognition would be to introduce a horizontal inequity into the alternative system, which cannot be justified.

Table 7.27 summarises the overall tax obligations for the homeowner occupiers under the baseline and V3 simulations depicting differences in current and constant monetary terms.

Table 7.27 A comparison of the overall tax obligations of US homeowners under the baseline and V3 simulations

Income Multiples	Homeowners (BL) ³⁰⁶	Homeowners (V3)	Differences (Current \$)	Differences (Constant \$)
1/2	\$14,632	\$16,865	-\$2,233	-\$1,488
1	82,061	98,042	-15,981	-14,439
2	235,371	304,374	-69,003	-74,031
4	664,871	851,440	-186,569	-211,902
5	906,406	1,181,666	-275,260	-331,546
Cumulative	<u>\$1,903,341</u>	<u>\$2,452,387</u>	<u>-\$549,046</u>	<u>-\$633,406</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 465 – 470.

The current difference of \$549,046 may be decomposed to the two specific subsidies and one specific obligation it comprises: \$273,351 represents the cumulative income tax subsidies realised from mortgage interest relief under the existing income tax system; \$7,888 represents the net additional income tax obligation corresponding to the unrecognised net imputed rental losses for all case families; and \$283,583³⁰⁷ represents the cumulative net tax subsidies realised from capital gains and income taxation on the disposal of investments. These incremental differences are depicted in Table 7.28.

³⁰⁶ With reference to Table 5.28 of Chapter 5 (An evaluation of horizontal equity)

³⁰⁷ This reflects the capital gains taxes of \$294,750 less the differences in income taxation of \$11,167 as reported under V2 (with reference to Table 7.16).

Table 7.28 A comparison of the overall tax obligations of US homeowners under the baseline, V1, V2 and V3 simulations

Income Multiples	Homeowners (BL) ³⁰⁸	Homeowners (V1) ³⁰⁹	Homeowners (V2) ³¹⁰	Homeowners (V3) ³¹¹
1/2	\$14,632	\$14,632	\$13,701	\$16,865
1	82,061	82,642	80,527	98,042
2	235,371	262,361	253,380	304,374
4	664,871	765,405	752,181	851,440
5	<u>906,406</u>	<u>1,051,652</u>	<u>1,069,015</u>	<u>1,181,666</u>
Cumulative	<u>\$1,903,341</u>	<u>\$2,176,692</u>	<u>\$2,168,804</u>	<u>\$2,452,387</u>
Incremental Differences		<u>\$273,351</u>	<u>-\$7,888</u>	<u>\$283,583</u>

A proportional representation of the monetary information reflected in Table 7.28 is presented in Table 7.29. In contrast with the results of the comparison of the UK case families in Table 7.23, the US lower tiered US case families are *less* disadvantaged from increased levels of neutrality in comparison with the higher tiered case families. To illustrate, the case family earning half the median income will incur a 6.4% *decrease* in overall tax obligations under V2 as opposed to the 113.9% increase assumed by the case family earning five times the median income under the same scenario.

Table 7.29 Proportional analysis of the overall tax obligations of US homeowners under the baseline, V1, V2 and V3 simulations where the respective homeowner obligations are set at 100%

Income Multiples	Homeowners (BL)	Homeowners (V1)	Homeowners (V2)	Homeowners (V3)
1/2	100%	100.0%	93.6%	115.3%
1	100%	100.7%	98.1%	119.5%
2	100%	111.5%	107.7%	129.3%
4	100%	115.1%	113.1%	128.1%
5	100%	116.0%	117.9%	130.4%
Cumulative	100%	114.4%	113.9%	128.8%
Incremental Differences		14.4%	-0.5%	14.9%

³⁰⁸ With reference to Table 5.28 of Chapter 5 (An evaluation of horizontal equity)

³⁰⁹ With reference to Table 7.5

³¹⁰ With reference to Table 7.15

³¹¹ With reference to Table 7.27

The horizontal equity effect from homeowner occupiers recognising capital gains taxation under V3 with regard for the alternative investors is a significant swing in liabilities. Under the baseline simulation the alternative investors incur a \$43,077 capital gains tax liability whereas the homeowner occupiers are completely exempt in spite of having a far greater gain. Under V3 the homeowner occupiers incur \$294,750 in capital gains tax liabilities from the disposal of their investments as compared with the previously stated \$43,077 owed by the alternative investors. The capital gains tax obligations for the three types of investors in the US are summarised in Table 7.30.

Table 7.30 Summary of the capital gains tax obligations under V3 for US homeowners, tenant / landlords and alternative investors

Income Multiples	Homeowners (V3)	Tenant Landlords³¹²	Alternative Investors³¹³
1/2	\$3,164	\$3,164	\$0
1	17,515	17,515	0
2	49,832	49,832	7,832
4	99,662	99,662	15,665
5	<u>124,577</u>	<u>124,577</u>	<u>19,580</u>
Cumulative	<u>\$294,750</u>	<u>\$294,750</u>	<u>\$43,077</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 465 – 470.

The difference in cumulative overall tax obligations between alternative investors and homeowner occupiers under V3 are provided in Table 7.31. The lower tiered homeowners (US-H½, US-H1 and US-H2) recognise rental losses in the first 13 years of the study (1990-2003). In so doing, their tax liabilities are less than their corresponding alternative investors. The second highest income earner and investor (US-H4) realise a portion of their losses until 1998. The highest tiered homeowner occupier (US-H5) does not recognise losses until the year of disposition, when all suspended losses are realised.

³¹² With reference to Table 5.24 of Chapter 5 (An evaluation of horizontal equity)

³¹³ With reference to Table 5.24 of Chapter 5 (An evaluation of horizontal equity)

Table 7.31 Differences in cumulative overall tax obligations under V3 between US homeowners and alternative investors in current and constant monetary terms

Income Multiples	Homeowners (V3)	Alternative Investors ³¹⁴	Differences (Current \$)	Differences (Constant \$)
1/2	\$16,865	\$15,081	\$1,784	\$834
1	98,042	82,474	15,568	13,977
2	304,374	269,756	34,618	28,041
4	851,440	787,283	64,157	53,363
5	1,181,666	1,085,533	96,133	98,786
Cumulative	<u>\$2,452,387</u>	<u>\$2,240,127</u>	<u>\$212,260</u>	<u>\$195,001</u>

Appendix V (Summaries of Specific and Overall Taxes), pages 465 – 470.

With the exception of the first six years of insignificant property tax concessions for homeowner occupiers, there is complete horizontal equity between the homeowner occupiers and the tenant / landlords under V3.

The occurrences of horizontal equities and inequities with regard to capital gains taxation are provided in Table 7.32 with respect to the baseline and V3 simulations.

Table 7.32 Comparison of US baseline and V3 equity frequencies (capital gains taxes) for homeowners and other investors

Investor	Simulations	Horizontal Equity	Horizontal Inequity (favouring the homeowner)	Horizontal Inequity (favouring the other investor)
Alternative Investor	Baseline (BL) ³¹⁵	2	3	0
	With CGT (V3)	0	0	5

³¹⁴ With reference to Table 5.28 of Chapter 5 (An evaluation of horizontal equity)

³¹⁵ With reference to Table 5.19 of Chapter 5 (An evaluation of horizontal equity)

Investor	Simulations	Horizontal Equity	Horizontal Inequity (favouring the homeowner)	Horizontal Inequity (favouring the other investor)
Tenant / Landlord	Baseline (BL) ³¹⁶	0	5	0
	With CGT (V3)	5	0	0

Source: Worksheets VI (Horizontal Analysis), AB-AD136.

Conclusions, comparisons and contrasting results

The third and final adjustment in instilling neutrality in the various tax systems is to tax the capital gains realised by homeowner occupiers upon the disposal of their residence. This theoretically ensures tax neutrality with investors of other investments.

The capital gains taxation of the UK homeowner occupiers creates a significant tax wedge with the alternative investors. The reader is reminded that complete horizontal equity of the overall taxation between these two investors is achieved under V1, the scenario in which the MIRAS benefit is removed. The next two variations, the taxation of imputed rental income and the taxation of capital gains, hinders that horizontal equity. Similarly, the gap between the US homeowner occupiers and alternative investors is smallest after the elimination of the mortgage interest deduction under V1. The difference in the combined cumulative overall taxation between homeowner occupiers and alternative investors under V1 is \$63,434. The net imputed rental losses included under V2 serves to widen the gap by further reducing the case families combined income tax obligations. The capital gains taxation of the homeowner occupiers' principal residence swings the metaphorical pendulum in the opposite direction, where the homeowner occupiers pay an additional \$212,260 in combined cumulative overall taxation.

³¹⁶ With reference to Table 5.15 of Chapter 5 (An evaluation of horizontal equity)

In direct contrast to the alternative investors, horizontal equity is achieved between the homeowner occupiers and the tenant / landlords in both the UK and the US simulations under V3.

Vertical Equity

United Kingdom

When capital gains are considered taxable to the homeowners under V3, the result is an introduction to progressive taxation where none existed before. The vertical equity effect of including a taxable capital gain in the homeowners' calculations under V3 increases the level of progressivity of the overall tax system.

The ARP indices indicate a progressive system of taxation. As with the income tax system, the highest level of progression rests with the lowest levels of investment (between US-H½ and US-H1) with regard to the ARP indices. Thereafter, the degrees of progressivity diminish as income increases. The MRP indices indicate a progressive system of taxation initially, then a regressive system at the higher levels of taxation. The MRP index calculated for all case families confirms a progressive system of taxation. With regard to the LP indices, the greatest degree of progressivity is at the lowest levels of income (US-H½ and US-H1) with diminishing levels thereafter. This structural index confirms once more that the system of taxing capital gains is indeed progressive. A summary of the structural progressivity indices calculated under the baseline and V3 simulations is provided in Table 7.33.

Table 7.33 Comparison of the structural indices calculated under the UK baseline and V3 simulations

<u>Structural indices</u>	<u>Baseline (BL)</u> <u>(Existing system)</u>	<u>Variation 3 (V3)</u> <u>(Introducing CGT)</u>	<u>Conclusions</u>
Average Rate Progression (ARP)	n/a	1.02987E-06	Introduction of progressivity
Marginal Rate Progression (MRP)	n/a	2.55666E-07	Introduction of progressivity
Liability Progression (LP)	n/a	3.792266269	Introduction of progressivity

Source: Worksheet IV (Vertical Analysis (H), G22, K22 and T22.

The Suits index determined by the cumulative capital gain tax liabilities with respect to the cumulative capital gains realised for homeowners under V3 is 0.1288³¹⁷. As with the structural indices, the baseline simulation does not produce a distributional index for comparison.

The vertical equity impact on the *overall* UK tax system from removing the MIRAS benefit and taxing imputed rental incomes and capital gains is established through the combination of weighted averages of tax specific Suits indices. The baseline overall Suits index is 0.1071³¹⁸ and the overall Suits index determined under V3 is 0.0998³¹⁹. The difference of -0.0073 between these two indices may be decomposed to the reductions in the degrees of progressivity attributed to MIRAS and the absence of the imputed rental income of -0.0074 and -0.0012 respectively, with an increase in progressivity from the inclusion of capital gains taxation of 0.0013. Table 7.34 summarises the impact on the overall Suits indices as the levels of neutrality are increased through the three alternative simulations.

Table 7.34 Summary of the overall effect on Suits indices from the UK simulations

<u>Simulations</u>	<u>Overall Suits Indices</u>	<u>Net increase (decrease) In Suits Indices</u>	<u>Cumulative differences in Suits Indices</u>
Baseline ³²⁰	0.1071	-	-
V1	0.0997	-0.0074	-0.0074
V2	0.0985	-0.0012	-0.0086
V3	0.0998	0.0013	-0.0073

Appendix V (Overall Measure of Progressivity), page 509.

Table 7.35 shows the cumulative average overall tax rates for the UK case families studied. These are the twenty-years' worth of total tax obligations to the twenty years' worth of income plus the gains realised in the final year (i.e. comprehensive income) for each respective set of families. While the removal of MIRAS reduces the overall progressivity of the UK tax system, the case families at the five levels of income and investment reflect increases in average rates of tax. There is a slight decline with the introduction of the imputed rental income into the tax base for

³¹⁷ Appendix V (Overall Measures of Progressivity), page 515.

³¹⁸ The reader is referred to Table 6.11 of Chapter 6 (An evaluation of vertical equity).

³¹⁹ Appendix V (Overall Measures of Progressivity), page 509.

³²⁰ The reader is referred to Table 6.11

reasons already established regarding the UK tax unit. The final variation has the effect of increasing the overall average rate of tax. The average tax rates recalculated under the third alternative scenario (V3) yield the same average tax rates as the tenant/landlords as expected.

Table 7.35 Comparison of the UK overall average tax rates of baseline and the three modified simulations³²¹

	BL Alternative Investor (A)	BL Tenant / Landlord (TL)	BL Home- owner (H)	V1 Home- owner (H)	V2 Home- owner (H)	V3 Home- owner (H)
	pp 243 - 248	pp 249 - 254	pp 237 - 242	pp 525 - 530	pp 531 - 536	pp 537 - 542
½	11.2%	10.6%	9.2%	10.6%	10.6%	10.6%
1	18.2%	17.5%	16.1%	17.3%	17.1%	17.5%
2	22.2%	22.0%	20.4%	21.1%	21.0%	22.0%
4	31.0%	30.3%	29.1%	29.4%	29.0%	30.3%
5	32.5%	31.8%	30.6%	30.9%	30.5%	31.8%
Cumulative	28.4%	27.8%	26.5%	26.9%	26.6%	27.8%

United States

Under V3, when tax treatment of capital gains realised by homeowner occupiers is the same as the tenant / landlords, rather than effectively excluded by the generous ceiling currently in legislation, the result is an introduction of progressive taxation at levels of income and investment where it did not exist before. That said, the impact of being able to recognise suspended losses at the higher levels of income and investment upon disposal of the property significantly reduces the progressivity of the income tax system. The vertical equity effect of including a taxable capital gain in the homeowner occupiers' calculations and releasing any related losses previously disallowed under V3 reduces the level of progressivity of the overall tax system.

The average tax rates for capital gains initially reflect progressive taxation with rising averages to rising income. However, from the second level of income and investment, the rates remain constant at 15%, thus reflecting proportional taxation. This is supported with the analysis of ARP indices in which progressivity is deduced at the lowest step and proportionality at the next two steps. The MRP indices all indicate regressive taxation at the extremes with proportional taxation in the middle

³²¹ Appendices IV and V (Overall Average Tax Rates), various pages referenced.

range. The LP index at the two initial steps suggests progressivity while the other two are proportional indicators.

The ARP and LP indices measuring the overall degree of progressivity of the system using extreme data (US-H½ and US-H5) both confirm progressive taxation. The MRP index indicates regression. These structural indices are summarised in Table 7.36.

Table 7.36 Comparison of the structural indices calculated under the US baseline and V3 simulations

Structural indices	Baseline (BL) (Existing system)	Variation 3 (V3) (Introducing CGT)	Conclusions
Average Rate Progression (ARP)	n/a	7.23227E-07	Introduction of progressivity
Marginal Rate Progression (MRP)	n/a	-3.61614E-07	Introduction of regressivity
Liability Progression (LP)	n/a	4.263704523	Introduction of progressivity

Source: Worksheet IV (Vertical Analysis (H), G22, K22 and T22).

In addition to the capital gains tax consideration, income taxes alter in the year of disposition for two reasons. First, the depreciation allowed as a rental expense in prior years is recaptured and taxed at 25% in most cases. Second, any unutilised losses upon disposition are recognised, thus lowering taxable income at the higher levels of income and investment. The effect of these two factors on the progressivity of the income tax system is discernible by comparing the structural indices recalculated under V3 with those calculated under V2. As the ARP and LP indices under V3 exceed the indices under V2, the income tax system is more progressive as a result. The structural indices as determined by the baseline, V1, V2 and V3 simulations are summarised in Table 7.37. There is a clear indication of increased progressivity in the US income tax system as the levels of neutrality are increased up to the final step when capital gains are considered under V3. As suspended passivity activity losses are finally recognised upon disposition of the property, the effect is a reduction in progressivity.

Table 7.37 Comparison of the structural indices on US income taxation calculated under the baseline, V1, V2 and V3 simulations

Structural indices	Baseline (BL) (existing tax system) ³²²	Variation 1 (V1) (w/o Mortgage Relief) ³²³	Variation 2 (V2) (with IRI) ³²⁴	Variation 3 (V3) (with IRI and CGT) ³²⁵
Average Rate Progression (ARP)	5.15837E-08	6.15179E-08	6.5971E-08	6.51215E-08
Marginal Rate Progression (MRP)	3.94528E-08	5.04432E-08	6.01225E-08	5.73775E-08
Liability Progression (LP)	3.199383661	3.801537543	4.037630059	3.98326883

Appendix V (Structural Progression Indices), pages 497, 502 and 507, respectively.

The conclusion under the Suits index with respect to capital gains taxation is the same with a moderate level of progressivity detected (i.e. SI of 0.0514). A different conclusion is reached however, with regard to the effect of the income taxation variation in the year of disposition. While the income tax system is still deemed progressive in its distribution of the tax liabilities, the level of progression significantly falls as a result of the recognition of suspended losses at the higher levels of income. The Suits index in 2009 under V2 is 0.1719 whereas under V3 it is 0.1687³²⁶. This has an impact on the overall Suits index as will be discussed next.

The vertical equity impact on the *overall* US tax system from removing the mortgage interest deduction and taxing imputed rental incomes and capital gains is established through the combination of weighted averages of tax specific Suits indices. The baseline overall Suits index is 0.1260³²⁷ and the overall Suits Index determined under V3 is 0.1328³²⁸. The difference of 0.0068 between these two indices may be

³²² The reader is referred to Table 6.7 of Chapter 6 (An evaluation of vertical equity).

³²³ The reader is referred to Table 7.10. These indices are nearly equal to those of the alternative investors in the original simulation. The differences being attributed to the abilities of the higher tiered homeowners to itemize deductions other than the mortgage interest (i.e. real estate taxes).

³²⁴ The reader is referred to Table 7.20.

³²⁵ These indices equal those of the tenant / landlords in the original simulation. The reader is referred to Table 6.7 of Chapter 6 (An evaluation of vertical equity).

³²⁶ Appendix V (Overall Measures of Progressivity), page 523.

³²⁷ The reader is referred to Table 6.15 of Chapter 6 (An evaluation of vertical equity).

³²⁸ Appendix V (Overall Measures of Progressivity), page 517.

decomposed to the increases in the degree of progressivity attributed to the mortgage interest relief and the absence of the imputed rental income of 0.0110 and 0.0098 respectively, with a decrease in progressivity from the inclusion of capital gains taxation of 0.0140. Table 7.38 summarises the impact on the overall Suits indices as the levels of neutrality are increased through the three alternative simulations.

Table 7.38 Summary of the overall effect on Suits indices from the US simulations

Simulations	Overall Suits Indices	Net increase (decrease) in Suits indices	Cumulative differences in Suits Indices
Baseline ³²⁹	0.1260	-	-
V1	0.1370	0.0110	0.0110
V2	0.1468	0.0098	0.0208
V3	0.1328	-0.0140	-0.0068

Appendix V (Overall Measure of Progressivity), page 517.

As establish in Table 7.38, the degree of progression of the overall tax system increases with the first two variations but decreases with the recognition of capital gains. The reason for this peculiarity is due to the allowance of the suspended rental losses accrued by the higher tiered homeowner occupiers (US-H4 and US-H5) in the final year of the study.

Table 7.39 shows the cumulative average overall tax rates for the US case families studied. These are the twenty-years' worth of total tax obligations to the twenty years' worth of income plus the gains realised in the final year (i.e. comprehensive income) for each respective set of families. The removal of mortgage interest relief has a more significant impact at the higher levels of income and investment as reflect in the average rates of tax. There is a slight decline with the introduction of the imputed rental income as the three lower tiers of home investors are able to recognise net rental losses. The final variation has the effect of increasing the overall average rate of tax. As found in the UK simulation, the average tax rates recalculated under the third alternative scenario (V3) yields the same average tax rates as the tenant / landlords in the US simulation. The one minor exception is with

³²⁹ The reader is referred to Table 6.15.

regard to the lowest tiered homeowner occupier who experience slight property tax concessions in the earlier years.

Table 7.39 Comparison of the UK overall average tax rates of baseline and the three modified simulations

	BL Alternative Investor (A)	BL Tenant / Landlord (TL)	BL Home- owner (H)	V1 Home- owner (H)	V2 Home- owner (H)	V3 Home- owner (H)
	pp 261 - 266	pp 267 - 272	pp 255 - 260	pp 543 - 548	pp 549 – 554	pp 555 - 560
1/2	3.6%	3.8%	3.3%	3.3%	3.2%	3.7%
1	9.9%	10.7%	9.3%	9.4%	9.3%	10.7%
2	16.2%	16.5%	13.3%	14.9%	14.6%	16.5%
4	23.7%	23.1%	18.9%	21.7%	21.7%	23.1%
5	26.1%	25.7%	20.6%	23.9%	24.7%	25.7%
Cumulative	21.5%	21.3%	17.3%	19.8%	20.0%	21.3%

Appendices IV and V (Overall Average Tax Rates), various pages referenced.

Conclusions, comparisons and contrasting results

Once again, the increased neutrality in the respective tax systems of the two countries of study affects the overall progressivity differently. While the taxation of capital gains introduces progressivity into both capital gains tax systems where it did not previously exist, the progressivity of the US income tax system is significantly impaired by the release of suspended losses. The fall in progression of the US income tax system overshadows the progressivity in the capital gains tax system under V3.

The modified UK capital gains tax system realises a progressivity (Suits) measurement of 0.1288, whereas the US under V3 is far less progressive with a Suits measurement of 0.0514. The progressivity of the UK overall tax system is positively affected by V3 with a Suits differential of +0.0013. Conversely, the progressivity of the overall tax system in the US is negatively affected as evidenced by a Suits differential of -0.0140.

The final step in assuring neutrality into the respective tax systems results in the same levels of progressivity between the homeowner occupiers and the tenant / landlords (with a slight variation in the US measures due to the minor property tax concessions). The UK alternative investors demonstrate less progressivity in the UK

tax system as compared with the other investors, whereas the US alternative investors show greater progressivity.

7.2. Neutrality analysis and decomposition of subsidies: conclusions

The third research question asks what the effect on equity would be under more neutral tax regimes in both countries. Three alternative scenarios of increasing levels of neutrality are considered in this chapter. In addition to being able to answer the question on effect, the methodology enables decompositions of the benefits and corresponding tax impacts. The neutrality effect is therefore considered under the following sub questions:

- How much of the inequities are attributed to the mortgage interest reliefs?
- How much of the inequities are attributed to the absence of imputed rental income?
- How much of the inequities are attributed to the absence of imputed rental income and capital gains taxation?

7.2.1. How much of the inequities are attributed to the mortgage interest reliefs?

The MIRAS benefits realised by the UK homeowner occupiers in the first ten years of the study total £24,459 in tax savings for all five case families. While the horizontal inequity is easily discernible, the impact this provision has on vertical equity requires more careful consideration.

MIRAS was withdrawn entirely from the UK income tax system in 1999/00. Before its withdrawal, it was systematically reduced first in terms of eligible mortgage debt and then in terms of applicable tax rates. While this effect is discussed at length in the next chapter on trends, it is important to note here what the distribution effect of the UK mortgage interest provision had as a result of these limitations.

A regressively³³⁰ distributed benefit increases the progressivity of the tax system in which it is present. The subsequent withdrawal (or in this case the simulated removal) of the benefit serves to decrease progressivity. This is clearly established in under variation 1 (V1) of the UK income tax system. The three structural indices and the Suits index recalculated under V1 demonstrate clearly the fall in progression resulting from the removal of MIRAS.

The US mortgage interest relief accounts for \$273,351 in income tax obligation variations between the homeowner occupiers and the other investors simulated as established by removing the mortgage interest expense from the eligible itemized deductions and recalculating the income tax computations for homeowner occupiers under the V1 simulation.

The vertical equity impact from removing the mortgage interest deduction is an improvement (i.e an increase) in the progressivity of the US income tax system. As the benefit of itemizing deductions has eroded over time due to systematic increases to the standard deduction, fewer individuals are itemizing, and those that do, are generally of higher incomes. This is established in the simulations in that the lower tiered homeowner occupiers (US-H½ and US-H1) do not itemize in the baseline simulation and only the higher tiered homeowner occupiers (US-H4 and US-H5) are able to benefit in some of the years under V1. If all of the benefit accrues to the higher/est levels of income, the distribution of the benefit is highly progressive³³¹. A progressively distributed benefit effectively decreases the progressivity of the tax system in which it is present. The removal of such a benefit serves to increase the progressivity of the system, as demonstrated in this simulation. This reaffirms the conclusions drawn from the UK analysis where the benefit is regressively distributed and its removal has the opposite effect.

³³⁰ A regressive tax is one that is more burdensome at the lower end of the income spectrum. A regressive benefit therefore is one that is of greater benefit at the lower levels of income, relative to income.

³³¹ A progressive tax is one that is more burdensome at the higher end of the income spectrum. A progressive benefit therefore is one that is of greater benefit at the higher levels of income, relative to income.

7.2.2. How much of the inequities are attributed to the absence of imputed rental income?

The tenant / landlords taxed under the UK tax regime incur a greater tax obligation (a combined cumulative total of £39,800) than the homeowner occupiers as a result of their realised net rental income. If homeowner occupiers are taxed on an equivalent imputed rental income, the same amount of inequity would be realised but with respect to the alternative investors while complete horizontal equity would then be realised between homeowner occupiers and tenant / landlords.

The vertical equity impact from omitting the imputed rental income is in fact, an increase in progressivity as is established on two points. One, the difference between the progressivity indices of the homeowner occupiers recalculated under V1 and the tenant / landlords is that the former has greater structural and distributional indices as compared with the latter. Two, the simulation including imputed rental income (V2) reduces the progression indices for the homeowner occupiers from those recalculated under V1.

It may seem peculiar that added income to a progressive income tax system should serve to reduce progressivity. This is the result of a basic tax-planning tool for reducing tax liabilities within the UK tax system, which is to split income between working and non-working spouses to ensure both personal allowances and lower tax bands are utilised. In so doing, half of the rental income attributed to the non-working spouses is, for the most part, offset by the personal allowances and any the residual income is taxed at a low/basic tax rate as opposed to the marginal tax rate of the working spouses. The effect of this is a dilution of average taxes and progression.

Unlike the UK, the US legislation regarding rental real estate activities provides significant tax benefits for certain qualified investors. An allowance for depreciation is given in addition to the other allowable expenses associated with the property. This tends to generate a rental loss in conjunction with the mortgage interest expense in the early years of activity. Rental losses are allowed when certain criteria are met, which is in stark contrast to the restrictions imposed by UK legislation. With the intention of being consistent with the respective regimes' legislation, the simulations for both countries have very different results in terms of net income and losses, and

when losses are recognised. As mentioned earlier in this section, the cumulative income tax on the rental income realised by all five UK families over the twenty-year period is £39,800. In the US, given the more generous deductible expenses and the timely recognition of certain net rental losses, the cumulative income tax *subsidy* on the realised imputed net rental losses amounts to \$7,888. While complete horizontal equity is established by V2 within the UK income tax system, there are other differences recognised within the US income tax system as discussed in Section 7.1.2, but these are not differences due to the absence the imputed rental income.

The vertical equity effect from including the early rental losses and later rental income in the US homeowner occupiers' computations is an increase in progressivity as evidenced by the three structural indices and the Suits index. This is established by comparing the recalculated indices under V2 with the baseline and V1 indices, as well as comparing the original indices calculated for the tenant / landlords with those calculated for the alternative investors.

7.2.3. How much of the inequities are attributed to the absence of imputed rental income and capital gains taxation?

The UK homeowner occupiers are exempt from capital gains taxation with respect to any gains realised on the disposition of their principal residences. The alternative investors are able to legally avoid capital gains taxation through tax planning techniques aimed at utilising the annual exemptions. Therefore, there is inadvertent horizontal equity between these two investors within the UK capital gains tax system. The tenant / landlords are taxed on their realised capital gains in excess of the annual exemptions (dual exemptions for married individuals with shared property). The result is a horizontal inequity totalling £58,077 for all five case families.

The combined horizontal inequities from the MIRAS provision (£24,459), the absence of the income taxation of an imputed rental income (£39,800) and the absence of the capital gains taxation in the year of disposition (£58,077) total £122,336 when comparing UK homeowner occupiers with tenant / landlords. These differences are completely eliminated under the V3 simulation. While removing

MIRAS from the simulation under V1 removes an obvious inequity with the alternative investors, the taxation of imputed rental income under V2 and capital gains under V3 introduce new inequities between homeowner occupiers and alternative investors totalling £99,976.

With regard to the vertical equity impact from the inclusion of imputed rental income and capital gains taxation for the UK study, the overall Suits indices computed under the V1³³² and V3 simulations are 0.0997 and 0.0998, respectively. The overall *decrease* in progressivity attributed to the taxation of imputed rental income is 0.0012 and the overall *increase* in progressivity attributed to the taxation of capital gains is 0.0013. The combined effect nearly cancels each other out with a remaining net difference of 0.0001 increasing in progressivity.

The US taxes gains realised on the sale of principal residences if such gains exceed generous thresholds (\$250,000, or \$500,000 if married filing jointly). None of the case families simulated fall within the capital gains tax net. The alternative investors realise significantly lower gains than their equivalent property investors, and the three exceeding the provisionally set exemption are taxed at 15%. The tenant / landlords are taxed in full on their realised gains at 15% and the depreciation previously claimed as rental expenses at 25%. At the same time, the higher tiered tenant / landlords (US-TL4 and US-TL5) are able to significantly reduce their income tax liabilities by recognising the remaining suspended losses from their rental activities.

Under V3, the homeowner is taxed identically to the tenant / landlord, incurring a combined capital gains and income tax obligation associated with the sale of the rental property of \$283,583. This represents the horizontal inequity with the tenant / landlords, where like for like comparisons are made. There remains significant difference with the alternative investors, but it must be noted that there are significant differences in the actual gains realised.

The vertical equity impact on the US income tax system as a result of recognising the suspended passive losses at the higher tiers is a reduction in progressivity. The

³³² M1 simulation results are used for comparison rather than the baseline as the question is specifically focussed on imputed rental income and capital gains taxation.

alignment of capital gains taxation of the principal residence with that of the rental property is an increase in progressivity with regard to the capital gains tax system. However, the impact on the US' tax system as a whole, as measured by the extended S index, is one of reduced progression.

7.2.4. Conclusion

This analysis focuses on the horizontal and vertical equity effects hypothetical improvements in neutrality would have on the existing UK and US tax systems. The methodology employed is a form of benchmarking analysis, which involves the establishment of hypothetical alternative tax systems that introduce increasing levels of neutrality. This methodology has been discussed in the literature produced by Flood and Yates (1989), Wood (1990), Hancock and Munroe (1992), Haffner and Oxley (1999), Haffner (2000), and Thalmann (2005 and 2007).

The three recognised steps of improved neutrality with regard to owner-occupied housing taxation have been established in the literature (Flood and Yates, 1989 and Hancock and Munroe, 1992). The 'commonly accepted' benchmark takes the existing tax system and eliminates mortgage interest relief from the income tax computations. This benchmark is at the bottom of the hierarchy. The next step in improving neutrality is referred to as the 'tenure neutral' benchmark. This corrects for the absence of imputed rental income in the homeowner occupiers' income tax base. The final step is the 'tax neutral' benchmark, which corrects for both income and capital taxation.

The methodologies identifying and quantifying horizontal and vertical inequities as established in Chapter 5 (An evaluation of horizontal equity) and Chapter 6 (An evaluation of vertical equity) are consistently employed within. This continued analysis enables the researcher to accurately decompose the existing tax subsidies in the UK and US tax systems. Such analysis further enhances the understanding of each country's favouritism towards homeowner occupiers, thus establishing a platform from which to consider policy reform.

The removal of mortgage interest relief establishes complete horizontal equity in the UK income tax system with alternative investors, while some differences still remain at the higher levels of income and investment within the US income tax system as a

result of the other itemized deductions including the real estate tax deduction. The vertical equity of the income system was enhanced by MIRAS in the UK, and therefore became less progressive with its removal. Conversely, the progressivity of the US income tax system is hindered by mortgage interest relief and therefore demonstrates greater progressivity upon removal of the mortgage interest deduction.

The introduction of an imputed rental income into the UK income tax system creates a horizontal inequity with alternative investors while ensuring horizontal equity with investors in rental real estate with regard to income taxation. As the simulated rental activities produce cumulative net rental losses in the US study, horizontal equity between the homeowner occupiers and the alternative investors is further compromised by this step in improved neutrality. This cannot be statistically generalised given the nature of the study, but highlights the complexities in considering such policy change within the US income tax system. The vertical equity of the UK income tax system is hindered with the recognition of a net imputed rental income as the progressivity of the UK homeowner occupiers is reduced. Conversely, the introduction of net imputed rental losses, in conjunction with the passive activity loss allowance, and net imputed rental income in the later years results in increased progressivity for the US homeowner occupiers.

Horizontal equity between the homeowner occupiers and the tenant / landlords in both countries is accomplished when both the imputed rental income and the capital gains are subject to the respective taxation. However, the horizontal inequities are significant between the homeowner occupiers and the alternative investors at this level of neutrality, as near horizontal equity inadvertently exists with the simple removal of mortgage interest relief. The reduction in vertical equity from taxing imputed rental income is more than offset by the increasing effect of taxing capital gains in the UK tax system. The vertical equity effect of recognising passive activity losses and capital gains in the year of disposal is a decrease in the US income tax system and an increase in its capital gains tax system.

In conclusion, while the literature on the optimal taxation of owner-occupied housing calls for the taxation of imputed rental income and capital gains on neutrality and equity grounds, this research highlights a few worthwhile considerations for the two countries studied. First, the horizontal equity between homeowner occupiers and

alternative investors in the two countries studied is compromised under such hypothetical reform. Second, the vertical equity of the income tax systems in both countries is also compromised. Finally, the complexities of the US income tax system regarding rental activities pose specific practical problems in considering the introduction of such tax reform. These include the provision of a depreciation allowance and the recognition of potential imputed rental losses. While theoretically sound and well reputed, the notion of the optimal taxation of owner-occupied housing needs to be thoroughly evaluated on equity and practical grounds within a country's specific tax regime.

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Chapter 8: Trend analysis

During the period of study (1990 through 2009) there have been several changes to the specific owner-occupied housing tax policies under examination. In addition to specific policy reforms, changes in the general tax structures have impacted the horizontal and vertical equity of taxpayers invested in homes and other alternatives in both countries. The impact of these changes cannot be fully appreciated through an examination of the 20-year time frame as a whole. For instance, the UK Stamp Duty Land Tax had several changes since 1990, significantly impacting horizontal and vertical equity. However, the rates applicable to the case families in the original simulation are those in effect on April 1990. The subsequent structural reforms are not apparent in either Chapter 5 (An Evaluation of Horizontal Equity) or Chapter 6 (An Evaluation of Vertical Equity). In order to highlight and substantiate the changes in horizontal and vertical equity as a result of changes in tax policy and structure, a modified methodology involving five-year rolling periods of study is employed.

This section reports on the changes in horizontal and vertical equity over the twenty-year period studied with regard to the specific UK and US tax policies: acquisition taxes, property taxes, the elements affecting income taxes and capital gains taxes. The effects of modifications and reforms to the specific policies will be highlighted and discussed and the impact of these changes on the overall tax obligations is considered. The purpose of this chapter is to answer the fourth and final research question:

Research Question 4: How have the recent respective tax reforms regarding owner-occupied housing (all implemented within the time frame studied) affected tax equity?

- Have the specific policy changes improved or hindered horizontal equity?
- Have the specific policy changes improved or hindered vertical equity?
- Have the recent reforms been more or less successful, on a comparative basis, in improving tax equity in the countries studied?

Figure 8.1. **The analytical steps underpinning chapter 8 (page 1 of 7)**

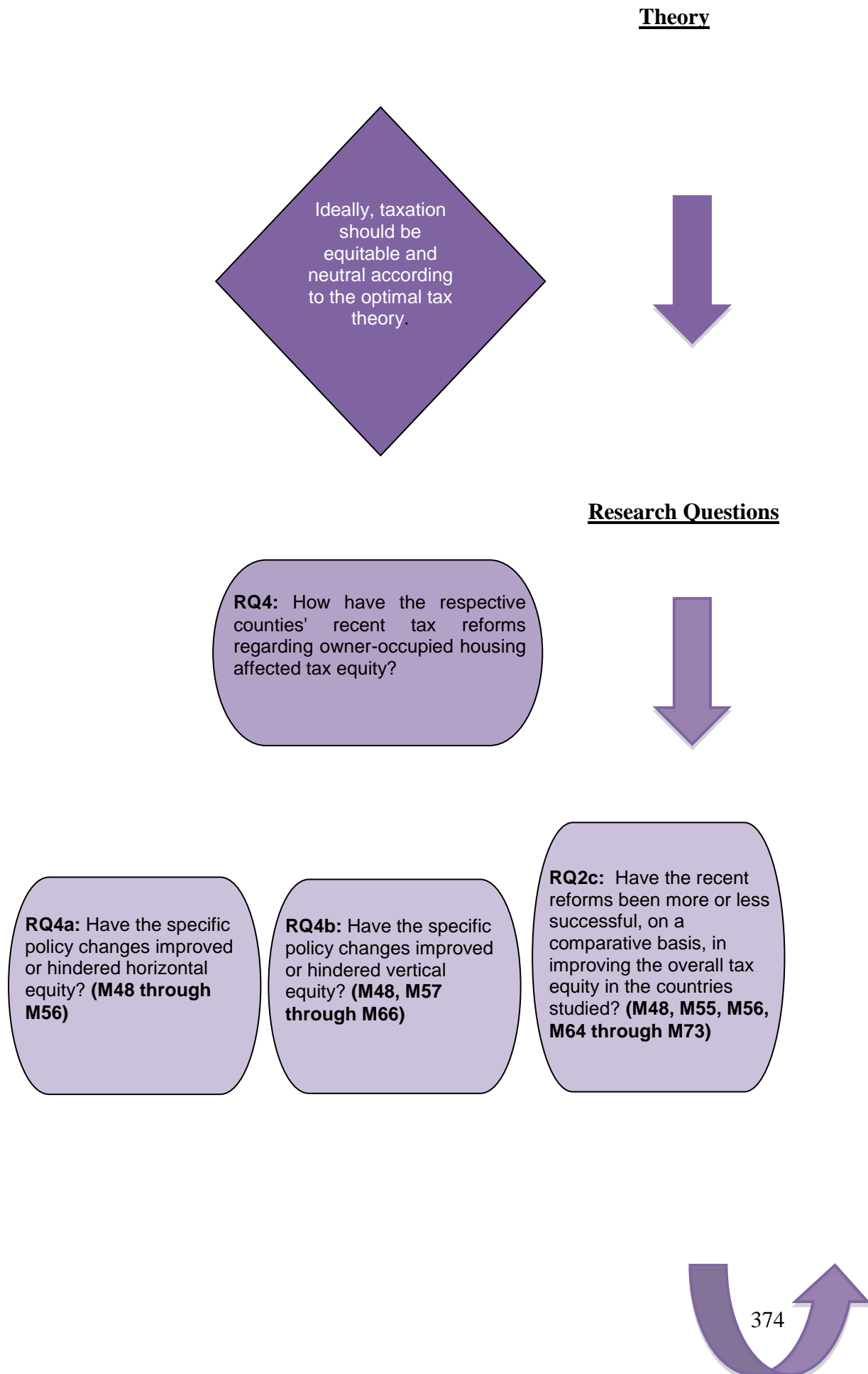


Figure 8.1 The analytical steps underpinning chapter 8 (page 2 of 7)

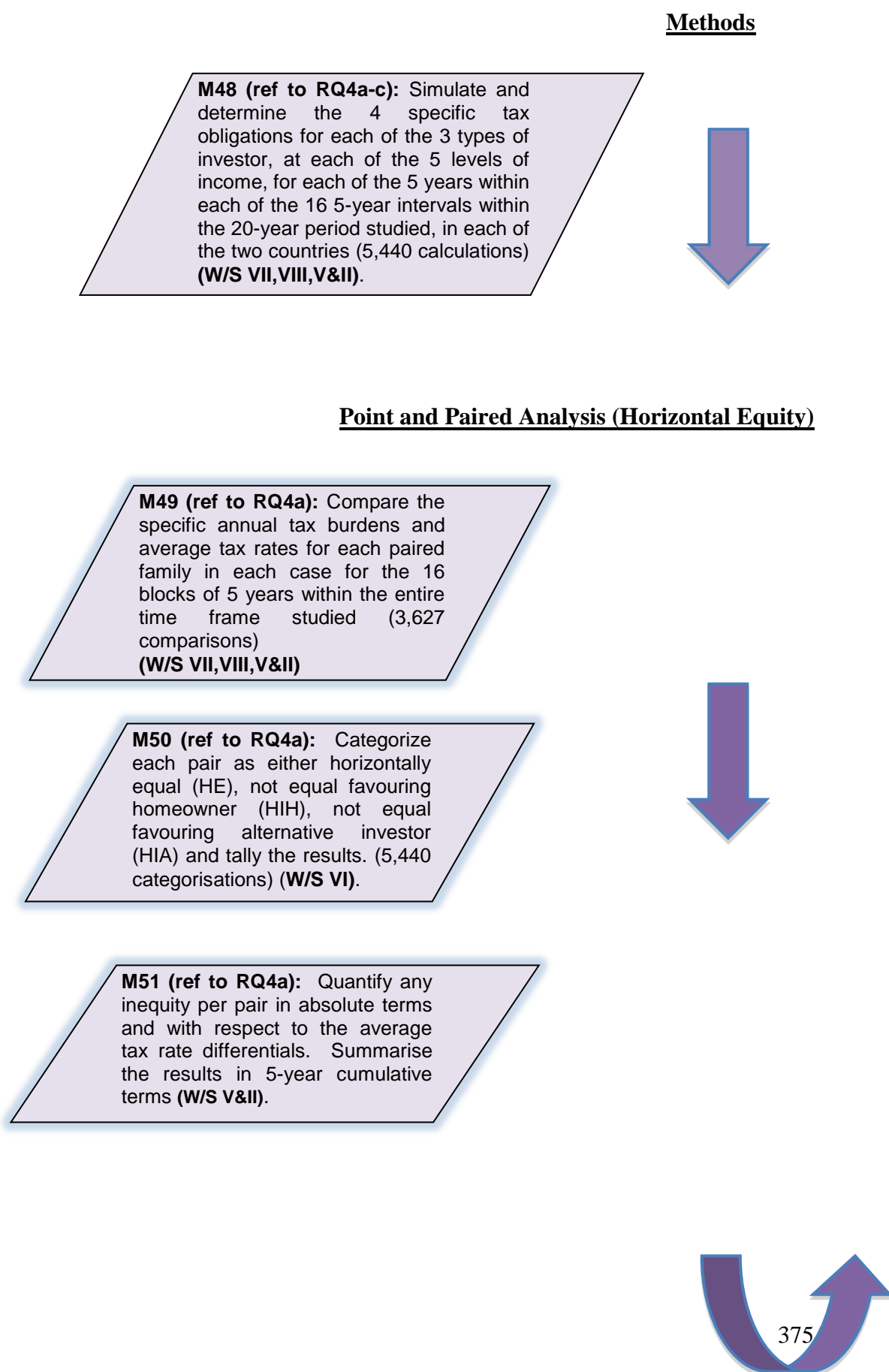


Figure 8.1 The analytical steps underpinning chapter 8 (page 3 of 7)

Within-country Analysis (Horizontal Equity)

M52: (ref to RQ4a): Compare the 15 subsequent acquisition tax obligations simulated with the original AT obligation simulated for the year beginning the 20-year period to determine improvements or hindrances to horizontal equity under subsequent policy. (480 comparisons) **(W/S V&II).**

M53: (ref to RQ4a): Compare the 15 preceding capital gains tax obligations simulated with the modified CGT obligation simulated for the five-year period ending the 20-year study to determine improvements or hindrances to horizontal equity under preceding policy. (480 comparisons) **(W/S V&II)**

M54: (ref to RQ4a): Compare the 2 recurring tax obligations (income and property taxes) simulated in each of the 5 years within each of the 16 blocks of five years with the corresponding obligations of the 2 other investors at each of the 5 levels of income in each country to determine improvements or hindrances to horizontal equity from policy changes. (3,200 comparisons) **(W/S V&II)**

M55 (ref to RQ4a and RQ4c): Compare the specific tax results of the paired analyses of the homeowners and alternative investors with those of the homeowners and tenant / landlords in absolute and ATR terms with-in each country studied (1,600 comparisons) .
(W/S V and II)



Figure 8.1 The analytical steps underpinning chapter 8 (page 4 of 7)

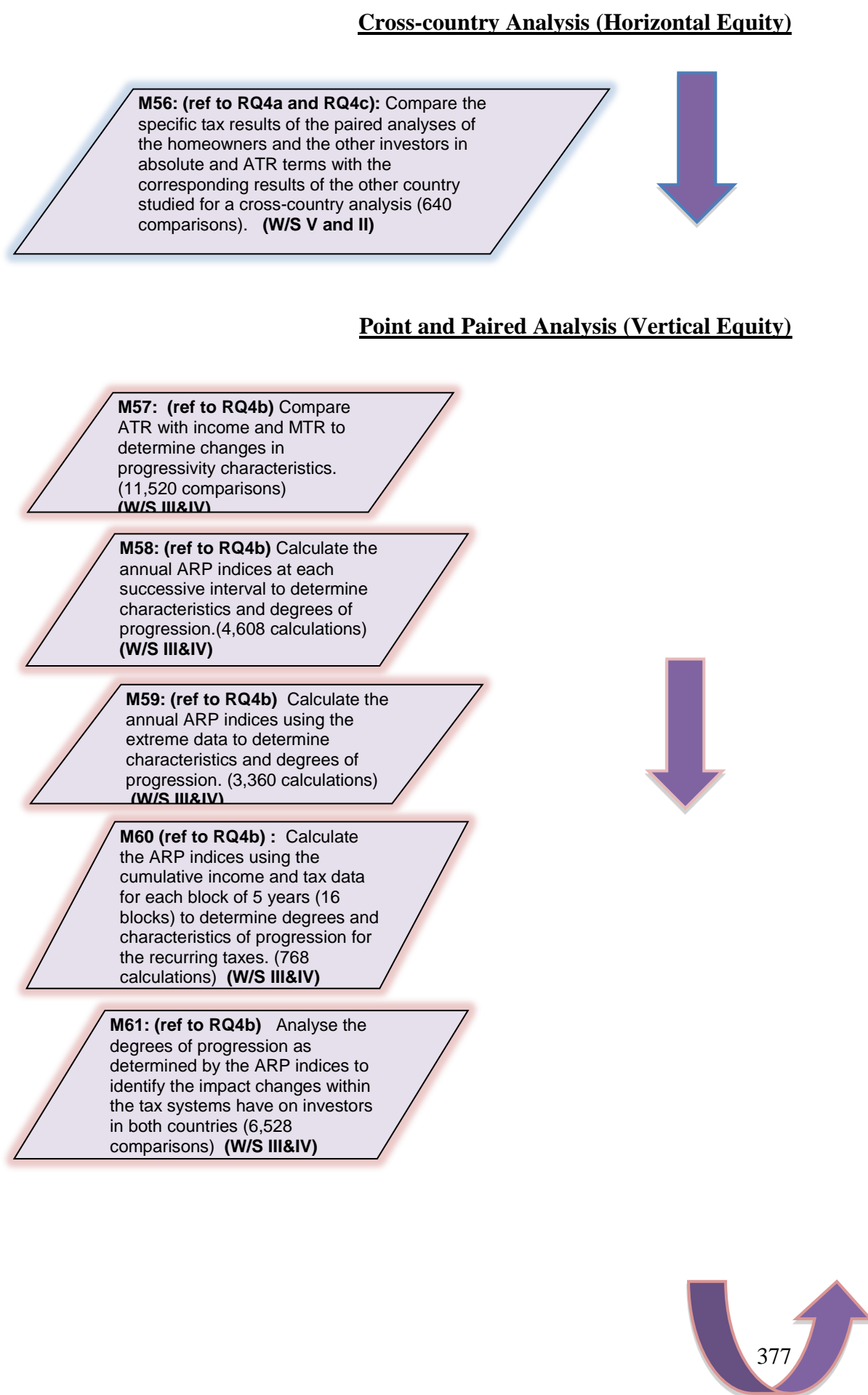


Figure 8.1 The analytical steps underpinning chapter 8 (page 5 of 7)

Point and Paired Analysis (Vertical Equity)

M62: (ref to RQ4b) Calculate the annual Suits indices for specific taxes to determine characteristics and degrees of progression. (1,152 calculations)
(W/S III&IV)

M63: (ref to RQ4b) Calculate the Suits indices using the cumulative income and tax data for each block of 5 years (16 blocks) to determine characteristics and degrees of progression for the recurring taxes. . (192 calculations)
(W/S III&IV)

M64: (ref to RQ4b and RQ4c): Analyse the trend of progression as determined by the Suits indices for the four specific taxes, for the three investors, in each country to determine improvements or hindrances to vertical equity under subsequent policy. Depict trends graphically. (1,344 comparisons)
(W/S V&II).



Within-country Analysis (Vertical Equity)

M65: (ref to RQ2c) Compare the levels and trends of the specific tax progressivity of the homeowner occupiers with the other investors in each country (672 comparisons)
(W/S III&IV)

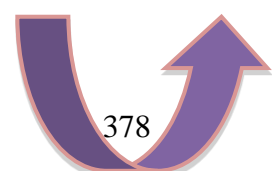


Figure 8.1 The analytical steps underpinning chapter 8 (page 6 of 7)

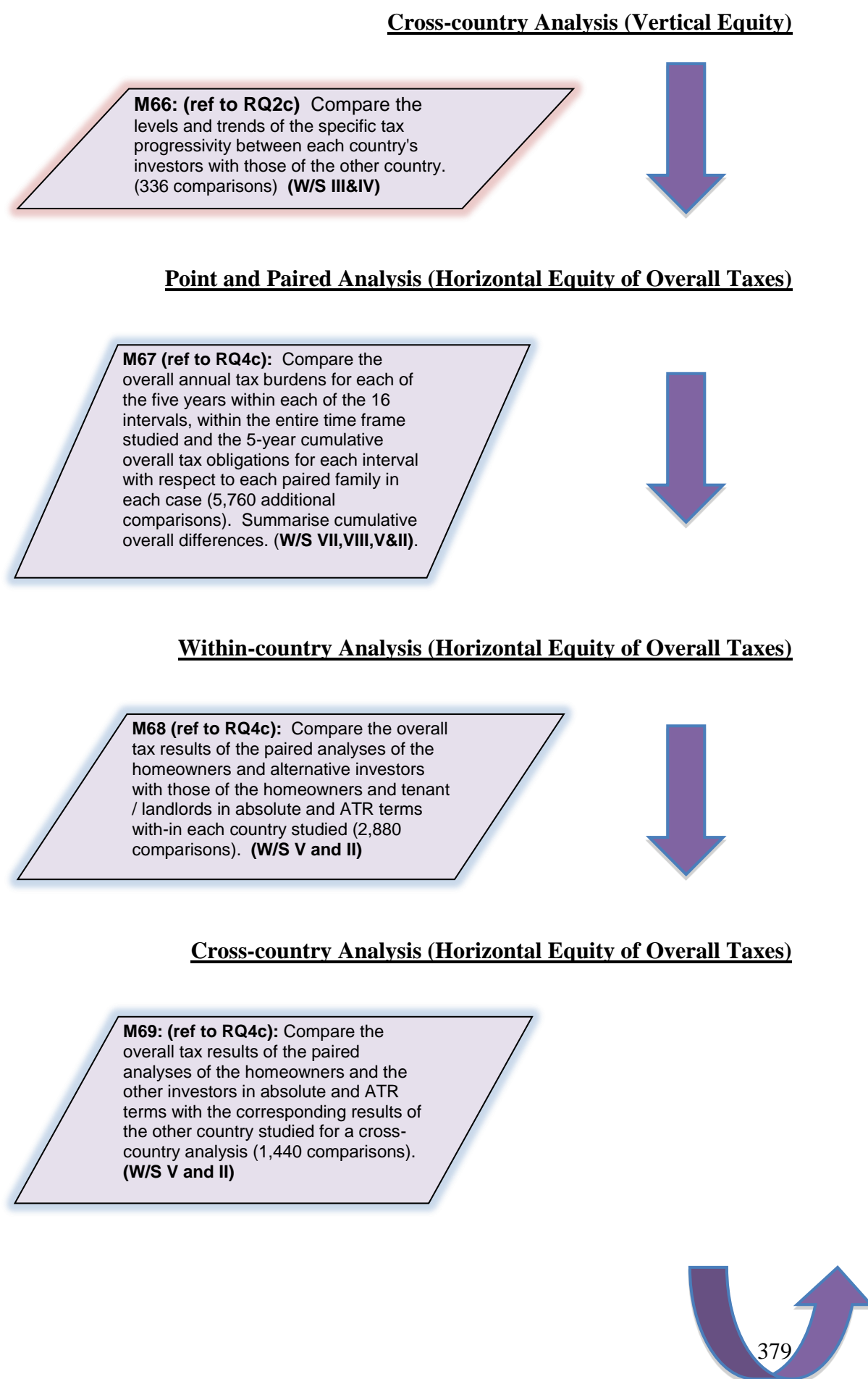


Figure 8.1 The analytical steps underpinning chapter 8 (page 7 of 7)

Point and Paired Analysis (Vertical Equity of Overall Taxes)

M70: (ref to RQ4c) Calculate the Suits indices for the overall tax systems based on weighted averages to determine characteristics and degrees of progression. (96 calculations) **(W/S III&IV)**

M71: (ref to RQ4c): Analyse the trend of progression as determined by the Suits indices for overall tax systems, for the three investors, in each country to determine improvements or hindrances to vertical equity under subsequent policy. Depict trends graphically. (96 comparisons) **(W/S V&II).**



Within-country Analysis (Vertical Equity of Overall Taxes)

M72: (ref to RQ4c) Compare the levels and trends of overall progressivity of the homeowner occupiers with the other investors in each country (48 comparisons) **(W/S III&IV)**



Cross-country Analysis (Vertical Equity of Overall Taxes)

M73: (ref to RQ4c) Compare the levels and trends of the overall tax progressivity between each country's investors with those of the other country. (24 comparisons) **(W/S III&IV)**

8.1. Trend analysis: results

The original simulations relevant to the horizontal and vertical equity evaluations (i.e. Chapters 5 and 6, respectively) are based on the assumptions that the respective case families purchase investments at the beginning of the 1990 (1990/91 with regard to the UK fiscal year) tax year, hold the investments for twenty years, and sell the investments at the end of the 2009 (2009/10 with respect to the UK fiscal year) tax year. In order to answer the aforementioned fourth research question and sub-questions, this section analyses the trends of the specific and overall taxes considered during the 20-year period of study by simulating a five-year rolling methodology.³³³ In so doing an assumption is made that the investments are purchased each consecutive year and disposed of at the end of the respective fourth year, thus creating consecutive five-year periods within the twenty years of study. For example, investments purchased at the beginning of 1990 are sold at the end of 1994; investments purchased in 1992 are sold in 1996, etc. There are sixteen periods of time recalculated in this manner as the last five-year time frame falling within the twenty-year period assumes purchases at the beginning of 2006 (2006/07) with corresponding sales at the end of 2009 (2009/10). The reader is referred to Chapter 4 (Methodology) for a full discussion of the methodology used for this analysis. Figures 8.2 and 8.3 on the next two pages illustrate the modified time frame methodology used herein.

A diagram of the first three steps of the deductive process undertaken in this phase of the research is provided in Figure 8.1. This section begins with an overview of the methodology with footnoted references to the twenty-six methods (M48 through M73) found in Figure 8.1. The findings are then reported in the following four tax-specific sub-sections (i.e. Sections 8.1.1 through 8.1.5), with conclusions, comparisons and contrasting results provided at the end of each sub-section. Finally, the relevant research question and sub-questions are answered in Section 8.2, thus concluding the deductive process in evaluating the trends of horizontal and vertical equity in the UK and US tax systems during the period 1990 through 2009.

³³³ The reader is referred to M48 of Figure 8.1.

Figure 8.2. An illustration of the original and modified time frames (UK)

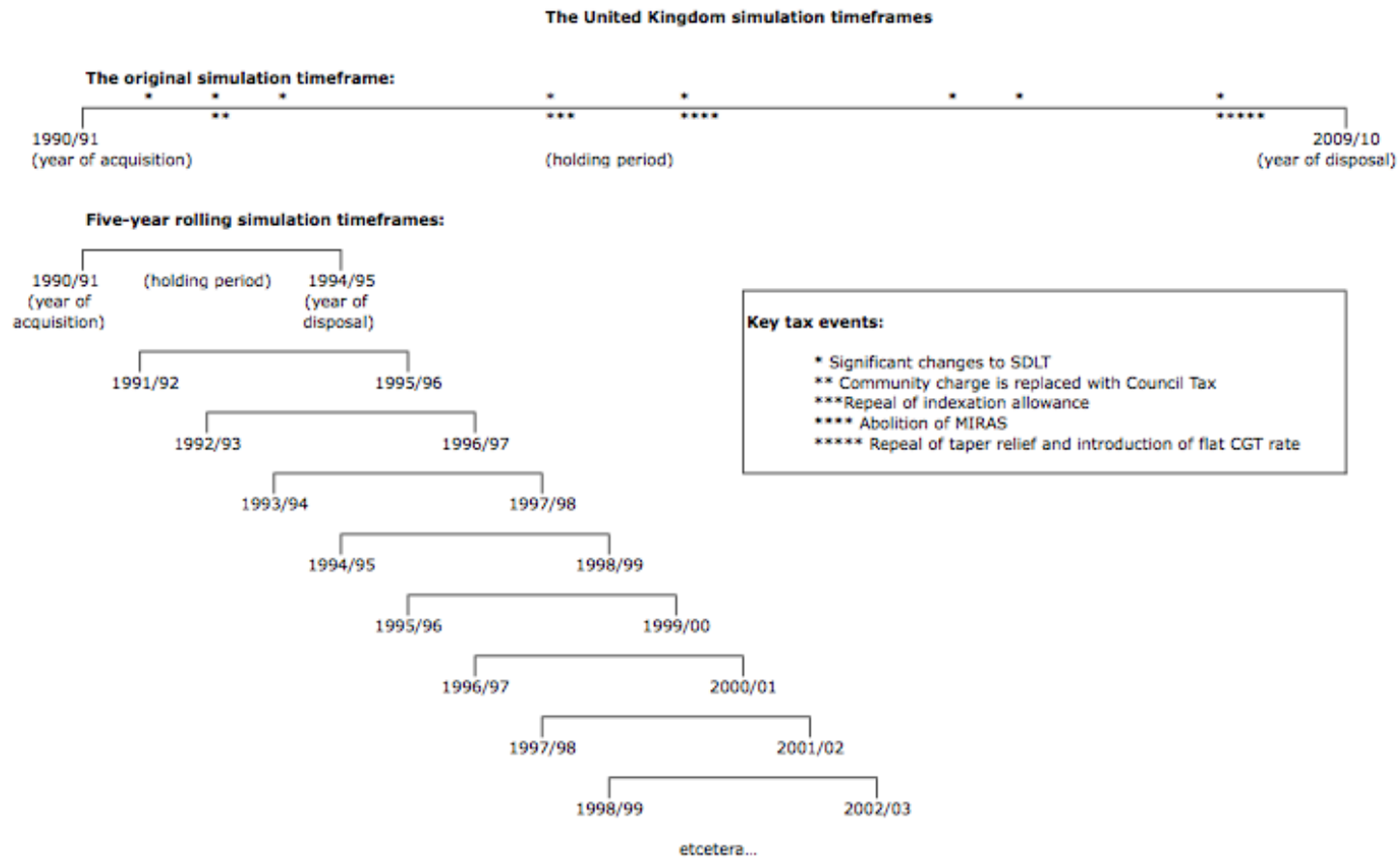
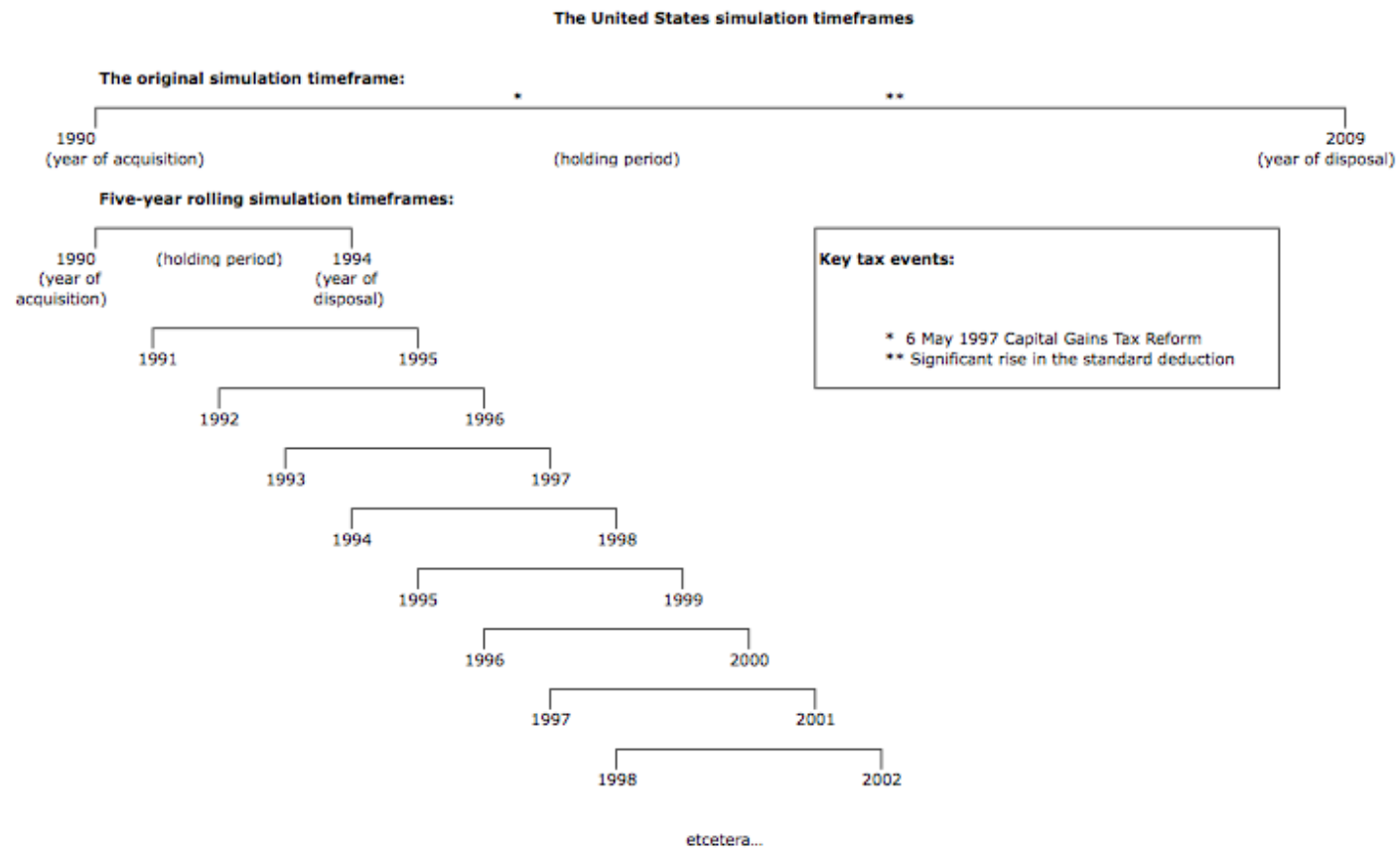


Figure 8.3. An illustration of the original and modified time frames (US)



Overview of the methodology (horizontal equity analysis: M49-M56)

As established in Chapter 5 with further references to methodologies established by Johnson and Mayer (1962) and Berliant and Strauss (1983), the initial analysis on horizontal equity compares the simulated tax liabilities of the homeowner occupiers with the other investors.³³⁴ If there are any differences in tax liabilities, regardless of the amount, an inequity is recorded. The total number of occurrences of horizontal equity and inequity favouring a particular taxpayer within the respective countries' studies are identified.³³⁵ Given the sixteen periods of time within this section, the five years within each period and the five levels of income and investment studied, there are 400 possible occurrences for the recurring taxes (property and income taxes) and eighty possible occurrences for the transactional taxes (acquisition and capital gains taxes). The inequities are then quantified in monetary (absolute) terms and with regard to average tax rates.³³⁶

Once the paired analyses have been completed for each 5-year time interval, the results of each pair are analysed on a longitudinal basis. With regard to acquisition taxes, the simulated results in each subsequent year of acquisition assumed are compared with the initial results at the start of the time frame (1990) and with other preceding years.³³⁷ That is to say that the horizontal inequity between UK homeowner occupiers and alternative investors in 1990/91 are compared with the horizontal inequities between these two investors in 1991/92, 1992/93, 1993/94, and so on through 2005/06 (the final acquisition year assumed under this modified simulation). This enables the researcher to comment on improvements to or hindrances of horizontal equity throughout the period of study. With regard to capital gains taxes, the simulated results in each year of disposal assumed are compared with subsequent years.³³⁸ That is to say that the horizontal inequity between US homeowner occupiers and tenant / landlords in 1994 are compared with the horizontal inequities between these two investors in 1995, 1996, 1997, and so on through 2009 (the final disposal year assumed under this modified simulation).

³³⁴ The reader is referred to M49 of Figure 8.1.

³³⁵ The reader is referred to M50 of Figure 8.1.

³³⁶ The reader is referred to M51 of Figure 8.1.

³³⁷ The reader is referred to M52 of Figure 8.1.

³³⁸ The reader is referred to M53 of Figure 8.1.

Finally, with regard to the recurring taxes (income and property taxes), the cumulative results of each 5-year interval during the 20-year period of study are analysed for improvements or hindrances to horizontal equity.³³⁹

Following the steps of analysis established in Chapter 5, the results of one set of pairs (e.g. the differentials between the UK homeowner occupiers and the UK alternative investors) are then compared with the other set of pairs (e.g. the UK homeowner occupiers and the UK tenant / landlords).³⁴⁰ This is in accordance with the *within-country analysis* as established by Maylor and Blackmon (2005) and discussed in Section 4.4.4 of Chapter 4 (Methodology).

The final analysis of horizontal equity compares the results from one country (e.g. the differentials between the UK homeowner occupiers and the UK alternative investors) with those of the other country (e.g. the differentials between the US homeowner occupiers and the US alternative investors).³⁴¹ This is in accordance with the *cross-country analysis* as established by Maylor and Blackmon (2005) and discussed in Section 4.4.4.

Overview of the methodology (vertical equity analyses: M57-M65)

The vertical equity analysis first establishes any changes in the progressivity characterisation of the specific taxes during the period studied (i.e. changes from proportional to progressive taxation, etcetera). This is accomplished by comparing the average tax rates of the specific taxes with income and marginal tax rates at the various levels of income and investment in accordance with the basic definitions established in the literature (Musgrave and Thin (1948), Rosen (2005), Norrengaard (1990), OECD (1990), among others).³⁴² Any changes in classifications are further substantiated (or challenged) by the progression indices. The degrees of progressivity are established using the Average Rate Progression (ARP) index (Musgrave and Thin, 1948) and the Suits (S) index (Suits 1977) in this section of the study.

³³⁹ The reader is referred to M54 of Figure 8.1.

³⁴⁰ The reader is referred to M55 of Figure 8.1.

³⁴¹ The reader is referred to M56 of Figure 8.1.

³⁴² The reader is referred to M57 of Figure 8.1.

The ARP indices are calculated for each successive level of income (e.g. UK-1 to UK-2 and UK-2 to UK4, etc.) for each specific tax.³⁴³ In addition, the overall progression between the lowest and highest income levels (e.g. US-1/2 to US-5) is measured using the ARP formula.³⁴⁴ With regard to the recurring taxes (i.e. property and income taxes), ARP indices are determined using the cumulative income and tax data for each of the 16 intervals of time.³⁴⁵ The indices are then analysed, focussing on the effects of the modifications or reforms to the specific tax systems.³⁴⁶ Conclusions may then be drawn on where the impacts from such changes occur in the given income scales.

The Suits index provides a measure of progression that is more easily compared on an annual basis, and on within-country and cross-country bases. It is for this reason that the Suits index plays a more dominant role in this part of the research on trend analysis. The Suits indices are first calculated for each specific tax in every year.³⁴⁷ Then, with regard to the recurring taxes (e.g. income and property taxes), S indices are calculated based on consecutive 5-year cumulative income and tax data to establish one measure of progression for each interval, which may then be analysed for trends.³⁴⁸ The trends of progression for the homeowner occupiers, the alternative investors and the tenant / landlords are reported separately.³⁴⁹ Conclusions on respective improvements or hindrances to vertical equity are discussed and illustrated through graphical depictions. Comparisons of the levels and trends of progressivity of the homeowners and other investors in each country studied are made for the within-country analysis.³⁵⁰ These results are then compared with the other respective investors in the other respective country for the cross-country comparison.³⁵¹

³⁴³ The reader is referred to M58 of Figure 8.1.

³⁴⁴ The reader is referred to M59 of Figure 8.1.

³⁴⁵ The reader is referred to M60 of Figure 8.1.

³⁴⁶ The reader is referred to M61 of Figure 8.1.

³⁴⁷ The reader is referred to M62 of Figure 8.1.

³⁴⁸ The reader is referred to M63 of Figure 8.1.

³⁴⁹ The reader is referred to M64 of Figure 8.1.

³⁵⁰ The reader is referred to M65 of Figure 8.1.

³⁵¹ The reader is referred to M66 of Figure 8.1.

Overview of the methodology (overall tax analyses: M66-M73)

Once the specific taxes have been analysed fully, consideration is given for the overall taxation of the investors. To reiterate, the overall tax obligations are simply the sum of the specific tax obligations. The paired analysis of overall taxation is from both annual and longitudinal perspectives.³⁵² As with the specific tax analyses, the overall taxes of the paired cases will be categorised into horizontal equity, inequity favouring the homeowner occupiers or inequity favouring the alternative investors. The 400 points of comparison will be tallied and discussed. The differences between the homeowner occupiers and the other investors are summarised at the cumulative overall tax burden level. The average tax rate of the cumulative (five-years of taxation) overall tax obligation will be determined by a comprehensive income denominator which is the sum of the annual income and the capital gain realised in the final year.³⁵³ The differences in overall tax obligations and average tax rates between homeowner occupiers and alternative investors are then compared with those between homeowner occupiers and tenant / landlords for a within-country analysis.³⁵⁴ Comparisons of the differences between investors of one country are then made with those of the other country for the cross-country analysis.³⁵⁵

The overall Suits indices are calculated for each five-year interval.³⁵⁶ This requires weightings based on the modified average tax rate (described above) to be applied to the Suits indices of the specific taxes. The resulting measures of progression for each investor are then analysed for trends³⁵⁷ and compared on a within-country³⁵⁸ and a cross-country basis³⁵⁹.

The findings are discussed in the following tax-specific sub-sections (i.e. Sections 8.1.1 through 8.1.5)

³⁵² The reader is referred to M67 of Figure 8.1.

³⁵³ The reader is referred to Section 4.6.2.5 of Chapter 4 (Methodology) for a full discussion on the overall average tax rate calculation using a comprehensive income denominator.

³⁵⁴ The reader is referred to M68 of Figure 8.1.

³⁵⁵ The reader is referred to M69 of Figure 8.1.

³⁵⁶ The reader is referred to M70 of Figure 8.1.

³⁵⁷ The reader is referred to M71 of Figure 8.1.

³⁵⁸ The reader is referred to M72 of Figure 8.1.

³⁵⁹ The reader is referred to M73 of Figure 8.1.

8.1.1. Acquisition taxes

In the original simulation, the UK acquisition taxation of case families invested in residential real property (UK-H and UK-TL) reflects the tax legislation applicable in April 1990. Significant changes to this tax system subsequently occurred, which are not reflected under the original simulation. The modification in simulation reflected in this section identifies these changes and highlights their impact on horizontal and vertical equity. It is assumed that each investor purchases property equal to 3.125 times their annual income (appreciating by 3% annually) on the 6th of April of each year (i.e. 1990 through 2005). The acquisition taxes are calculated accordingly, based on the respective years' thresholds and rates. The tax legislation relevant to the UK alternative investors remained constant during the twenty years studied. In the modified simulation, the acquisition tax is recalculated for the alternatively invested case families (UK-A) to reflect greater equity investments. The equity investments are equal to 0.625 times the annual income (appreciated by 3% each year), which matches the initial investments of the case families invested in real property. Unlike the original simulation however, further equity investments are not assumed given the relatively short periods of investment.

The US acquisition tax system assumed in the original simulation is held constant in this modified simulation. While this section therefore will not offer new insight to the US acquisition tax system as an independent study, modified simulations are necessary in order to compare and contrast the variations between the UK and the US for both the horizontal and vertical analyses. Therefore, consistent with the modifications to the UK simulations, the US investors' acquisition taxation considers a 3% appreciating tax base.

Horizontal Equity

In the original simulation it is deduced that the UK and US homeowner occupiers and tenant / landlords are horizontally equal within their respective tax systems as property investors incur the same tax liabilities and that the differences occur between the countries' respective sets of property investors and alternative investors. With the exception of the lowest tiered UK investors (UK-1/2), the rate differentials between the property investors and alternative investors is 0.5% in 1990/91, the

greater tax obligations resting with the property investors in both countries. The tax exemption for the lowest tiered UK homeowner occupiers and tenant / landlords results in the same 0.5% rate differential, but the greater tax obligation rests with the UK alternative investor.

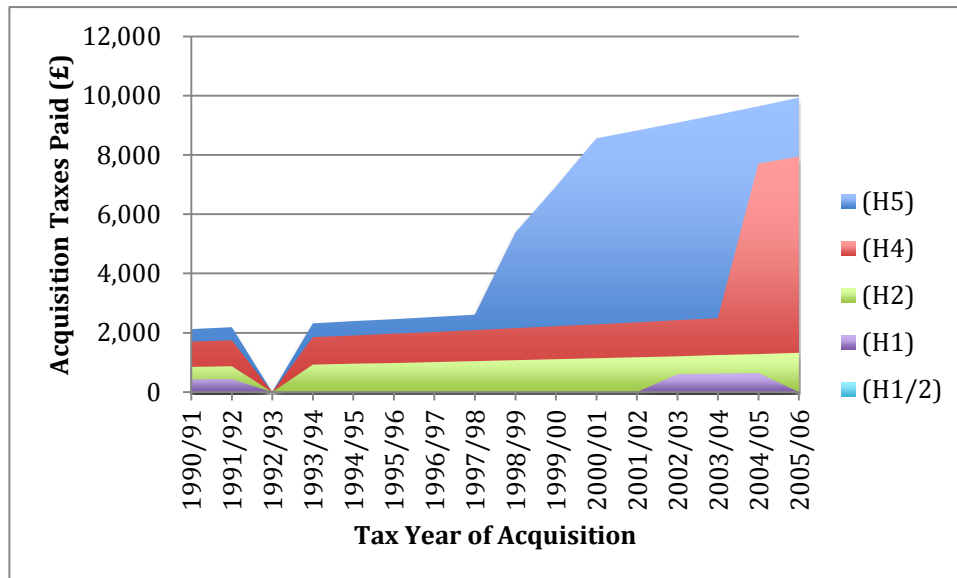
It is concluded in Chapter 5 (An evaluation of horizontal equity) that the greater horizontal inequity rests within the US acquisition tax system, in spite of the same rate differentials. This is primarily because the UK tax system maintains a nil rate band for property investments whereas the US does not. Further, the monetary level of inequity in the UK is reduced by the given additional acquisition taxes paid by the alternative investors on their simulated subsequent investments (and reinvestments for the higher tiered alternative investors).

The remainder of this section discusses the reforms to the UK acquisition tax system in full and the respective impacts on horizontal and vertical equity with sub-sectional conclusions, comparisons and contrasting results to the unchanged US acquisition tax system.

United Kingdom

With regard to the UK study, the highest earners and investors in real property (UK-H5 and UK-TL5) incur higher SDLT rates from 1998. The second to highest earners/investors (UK-H4 and UK-TL4) do not exceed the 1% tax band until 2004. The other case families do not incur higher SDLT rates at all. Figure 8.4 depicts the SDLT in monetary terms for the UK case families studied. The lowest income earners/investors (UK-H½ and UK-TL½) do not appear in Figure 8.4, as they do not incur SDLT at any point in the 20-year period since they consistently fell below the first threshold.

Figure 8.4. Acquisition taxes incurred by case families invested in residential property (homeowner occupiers and tenant / landlords) at the beginning of each respective tax year



Appendix VI (Chapter 8 Figures), page 561.

This is a classic example of stealth taxation as illustrated at the two higher income / investor levels within this study. The higher rate bands have not been adjusted since their introduction in July 1997. Twelve and a half years later, while the average house has appreciated 174.2%, UK taxpayers are left with significantly eroded thresholds. If the bands were adjusted for house price inflation, the second tier would be set at £685,500 and the top tier would be set at £1,371,000.

On comparing the acquisition taxation of the UK homeowner occupiers and the alternative investors, the horizontal inequities favoured the lowest investors in homes (UK-H $\frac{1}{2}$) throughout the time frame studied (16 occurrences), as they never exceed the set nil-rate bands while the alternative investors consistently incurred the 0.5% tax levy on their investments. The next level of homeowners (UK-H1) incurred acquisition taxes in the tax years 1990/91, 1991/92 and then again in 2002/03, 2003/04 and 2004/05 when the value of their home exceeded the nil-rate band. The result of this is 5 occurrences of horizontal inequity favouring the alternative investors and 11 occurrences of horizontal inequity favouring the homeowners when the homeowners avoided SDLT set by the nil-rate bands. The remaining levels of income earners and investors in homes (UK-H2, UK-H4 and UK-H5) are able to

avoid SDLT in one year only – 1992 - in which the lowest threshold was set at £250,000 resulting in no acquisition taxes paid by all case families (3 additional occurrences of horizontal inequities favouring the homeowners). This is clearly reflected in Figure 8.4 as sharp dip in 1992/93. The remaining 45 occurrences of horizontal inequities favour the alternative investors as they consistently pay less in acquisition taxes. The results in terms of occurrence comparisons and quantitative differences are depicted in Tables 8.3 (on page 395) and 8.1, respectively.

The acquisition taxes paid by the alternative investors stay constant at 0.5% of the asset values whereas the acquisition taxes incurred by the residential property investors (homeowner occupiers and tenant / landlords) vary throughout the period of study. The total additional tax incurred by the homeowner occupiers (and tenant / landlords, as they incur an equivalent tax) as compared with the alternative investors is summarised in Table 8.1 in current monetary terms.

Table 8.1 Additional UK acquisition taxes paid by homeowner occupiers over alternative investors at each level of income and investment

Year of Acquisition:	Levels of Income and Investment:				
	(UK-5)	(UK-4)	(UK-2)	(UK-1)	(UK-1/2)
	pp 611-614	pp 607-610	pp 603-606	pp 599-602	pp 595-598
1990/91	1,913	1,530	765	383	-21
1991/92	1,970	1,576	788	394	-22
1992/93	-225	-180	-90	-45	-23
1993/94	2,090	1,672	836	-46	-23
1994/95	2,153	1,722	861	-48	-24
1995/96	2,217	1,774	887	-49	-25
1996/97	2,284	1,827	913	-51	-25
1997/98	2,352	1,882	941	-52	-26
1998/99	5,115	1,938	969	-54	-27
1999/00	6,654	1,996	998	-55	-28
2000/01	8,282	2,056	1,028	-57	-29
2001/02	8,530	2,118	1,059	-59	-29
2002/03	8,786	2,181	1,091	545	-30
2003/04	9,050	2,247	1,123	562	-31
2004/05	9,321	7,457	1,157	579	-32
2005/06	9,601	7,681	1,192	-66	-33

Appendix VII (Summaries of Differences in Specific and Overall Taxes), various pages referenced.

Consistent with the reporting of the results of Chapter 5, the tax liabilities for the alternative investors are simply subtracted from the tax liabilities of the corresponding homeowner occupants to quantify the horizontal inequities at each level of income and investment as determined by the absolute monetary differences. Where the difference is negative (e.g. UK-1/2), the greater tax obligation rests with the alternative investor.

The significant increase in taxation illustrated in Figure 8.4 for the higher tiered property investors (UK homeowner occupiers and tenant / landlords at four and five times the median income) is also clearly depicted in Table 8.1 where the applicable tax rate rose to 3% from 2000/01 for the highest tiered property investors (U-H5 and UK-TL5) and from 2004/05 for the next highest property investors (UK-H4 and UK-TL4). Another inequity emerging from this analysis and particular to the slab-tax system is worth noting. In the tax year 2002/03 with respect for the median income homeowner (UK-H1), the assumed house value of £60,595 exceeded the 1% threshold of £60,000 for SDLT, yielding a tax obligation of £606 (the £545 reflected in Table 8.1 is net of the £61 acquisition taxes assumed by the alternative investor). In other words, an additional £595 in acquisition value has resulted in £606 in taxation. Given this peculiarity of the SDLT, house values rarely exceed thresholds by relatively small margins.

Given the results reflected in Table 8.1 and to address the research question on whether acquisition policy changes have improved or hindered horizontal equity, each level of income and investment must be separately considered. The lowest tiered homeowners (UK-H1/2) are unaffected by the changing thresholds as they fall within the nil-rate band the entire time frame studied. Therefore, the slight horizontal inequity they have with the alternative investors remains constant throughout the periods. The next level of income earner and investor (UK-H1) benefit from the increases in thresholds for the 1% band in 1992/93 and again in 2005/06. When this particular case family is assessed an acquisition tax at 1%, the horizontal inequity favours the corresponding alternative case family by 0.5%. However, when the case families invested in property (UK-H1 and UK-TL1) fall below the tax threshold, the favouritism shifts to them from the alternatively invested case families (i.e. UK-A1) at the same rate differential of 0.5%. The next level

homeowner occupier and tenant / landlord (UK-H2 and UK-TL2) benefit from the 1992/93 increase in the 1% threshold for one year. Otherwise, the policy changes have no effect throughout the time frame studied at this level of income and investment as these individuals remained within the 1% tax band for SDLT. The second highest income earner investor (UK-H4) also benefits from the 1992/93 increase in the 1% threshold but is adversely affected by the subsequent introduction of the 3% band when finally caught within it in 2004/05 and 2005/06. Finally, the highest level of income earner and investor (UK-H5) also benefits from the 1992/93-threshold increase but has a number of subsequent setbacks in horizontal equity resulting from the increases in tax rates. This individual is immediately caught by the introduction of a higher rate band (2%) in 1998/99, which escalates over the next two years to 2.5% in 1999/00 and then to 3% in 2000/01. The result is significantly higher acquisition taxation in these years and therefore, significantly greater horizontal inequities with their corresponding case family alternatively invested.

It should be noted that the results in Chapter 5 (An evaluation of horizontal equity) reflected additional investments³⁶⁰ and, accordingly, additional acquisition taxes paid throughout the period studied with regard to the alternative investors. These resulted in 96 occurrences of horizontal inequity favouring the homeowners (see Table 5.1). Given the relatively short periods of time analysed in this section, the assumptions of additional investments by the alternative investors is not made, which results in a slight deviation from the original methodology. Property investors made relatively small equity contributions through the respective repayment mortgages. The equity investments made by the alternative investors in the initial years of each of the five-year intervals are the only equity investments assumed and thus, subject to acquisition taxes in both countries.

As the UK homeowners and tenant / landlords incur the same acquisition taxes throughout the study, there is complete horizontal equity between them as reflected in Table 8.3 on page 395.

³⁶⁰ In order to simulate case families of equal circumstance for the purpose of analysing horizontal equity, the original simulations assumed equivalent equity contributions during the 20-year period of study. The principal repayments for each case family invested in real property were calculated through amortisation and an equivalent amount was deemed contributed by the alternative investors during the time frame.

United States

Acquisition taxes on property investments are administered at state and local levels of government within the US. A 0.5% proportional tax is assumed in the study without variation. It is uncommon within the US to administer an acquisition tax on securities investments and therefore is not assumed within the simulations. The results are complete horizontal equity between homeowners and tenant / landlords (80 occurrences) and complete horizontal inequity favouring the alternative investors (80 occurrences) throughout the study, as depicted in Table 8.3 on the following page. The acquisition taxes assumed to be paid by the homeowners that account for these inequities are quantified in Table 8.2.

Table 8.2 Differences in acquisition taxes paid between US homeowners and alternative investors at each level of income and investment

Year of Acquisition:	Levels of Income and Investment:				
	(US-5) pp 659-662	(US-4) pp 655-658	(US-2) pp 651-654	(US-1) pp 647-650	(US-1/2) pp 643-646
1990	2,344	1,875	938	469	234
1991	2,414	1,931	966	483	241
1992	2,486	1,989	995	497	249
1993	2,561	2,049	1,024	512	256
1994	2,638	2,110	1,055	528	264
1995	2,717	2,174	1,087	543	272
1996	2,799	2,239	1,119	560	280
1997	2,883	2,306	1,153	577	288
1998	2,969	2,375	1,188	594	297
1999	3,058	2,446	1,223	612	306
2000	3,150	2,520	1,260	630	315
2001	3,244	2,595	1,298	649	324
2002	3,342	2,673	1,337	668	334
2003	3,442	2,754	1,377	688	344
2004	3,545	2,836	1,418	709	355
2005	3,651	2,921	1,461	730	365

Appendix VII (Summaries of Differences in Specific and Overall Taxes), various pages referenced.

Table 8.3 Equity frequencies (acquisition taxes)

Acquisition taxes: comparison between countries and investors			
Country and Investors	Horizontal Equity	Horizontal Inequity (favouring the homeowner)	Horizontal Inequity (favouring the alternative investor)
UK-A	0	30	50
US-A	0	0	80
UK-T	80	0	0
US-T	80	0	0

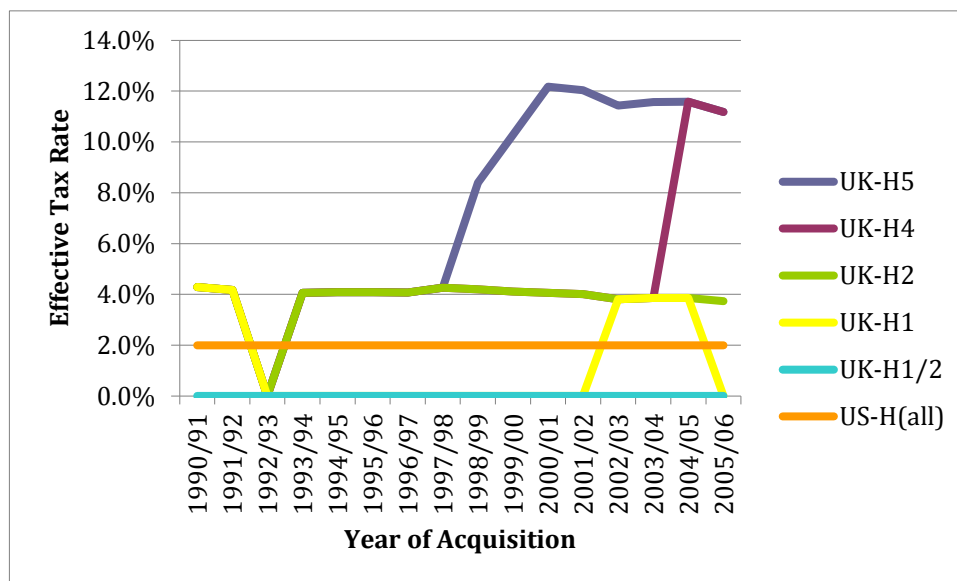
Source: Worksheet V (Overall Taxes (Absolute £)), AP-AR1238, X-Z1238.

Conclusions, comparisons and contrasting results

With the increasing rates of taxation in the years subsequent to the initial year of study (i.e. 1990/91) on real property investments in the UK, greater horizontal inequities occurred between such investors (UK-H and UK-TL) and the alternative investors (UK-A). The UK rates of taxation relevant in this simulation range from nil to 3% (however, the top rate of SDLT has been 4% since March 2000). As the rate of taxation of alternative investments including stocks and shares remain constant throughout the period studied (i.e. 0.5% without a threshold), the increases in horizontal inequities occur once the second and third thresholds for investors in real property are breached at the top end of the studied income scale.

The effective rates of taxation when comparing the total equity invested to the acquisition taxes paid produces some interesting results given the relatively short periods of investment in this simulation. These are reflected in Figure 8.5.

Figure 8.5. Effective tax rates of homeowner occupiers (and tenant / landlords) at all income levels in both countries



Appendix VI (Chapter 8 Figures), page 562.

The effective tax rate for the US investors in real property is 2% at all levels of income and investment studied and is represented in Figure 8.5 as an orange line. The UK investors at the lowest tier of income and investment (UK-H $\frac{1}{2}$) do not incur an acquisition tax and therefore the line reflecting their effective tax rate rests on the horizontal axis representing nil per cent. The four higher tiered UK income earner / investors share the same results until 1993/94 when UK-H1 also drops below the threshold and remains there until 2002/03. The three higher tiered income earner / investors then share the same results until 1998/99 when the case family with highest level of investment (UK-H5) incur higher rates of taxation. UK-H2 and UK-H4 remain at the same level of taxation until 2004/05, when UK-H4 incurs a higher rate. While this type of analysis leads nicely into the follow discussion on vertical equity, it is important to note that the jumps in taxation for UK property investors result in greater horizontal inequities when compared with their alternative investor counterparts. While the variation in taxation assumed within the US remain constant throughout the period studied, greater levels of horizontal inequities are therefore realised by the UK case families at the different levels of income and investment studied (with the exception of the lowest- tiered family, UK-H $\frac{1}{2}$, who are exempt from acquisition taxation).

Vertical Equity

In the original simulation it is deduced that the UK and US homeowner occupiers and tenant / landlords are vertically equal within their respective tax systems as property investors incur the same tax liabilities and that differences occurred between the countries' respective sets of property investors and alternative investors.

It is highlighted in Chapter 6 (An evaluation of vertical equity) that the acquisition tax systems applicable to real estate investments in the two countries differs in that the UK taxes transactions in excess of a given threshold (e.g. £30,000) in 1990 whereas most states within the US tax all property investments (i.e. no exemption allowance). In other words, the UK acquisition tax system is a progressive system of taxation with two rates: nil and 1%; whereas the US tax system is assumed to be strictly proportional with a flat rate of 0.5%. This being the case, the UK acquisition tax system is deemed more vertically equitable in comparison with the US tax system.

With respect to investments in alternative capital assets (e.g. financial investments), the UK proportional acquisition tax system is considered more vertically equitable when compared with the non-existent US acquisition tax system.

The remainder of this section discusses the impact of the reforms to the UK acquisition tax system on vertical equity; followed by conclusions, comparisons and contrasting results with the static US tax system.

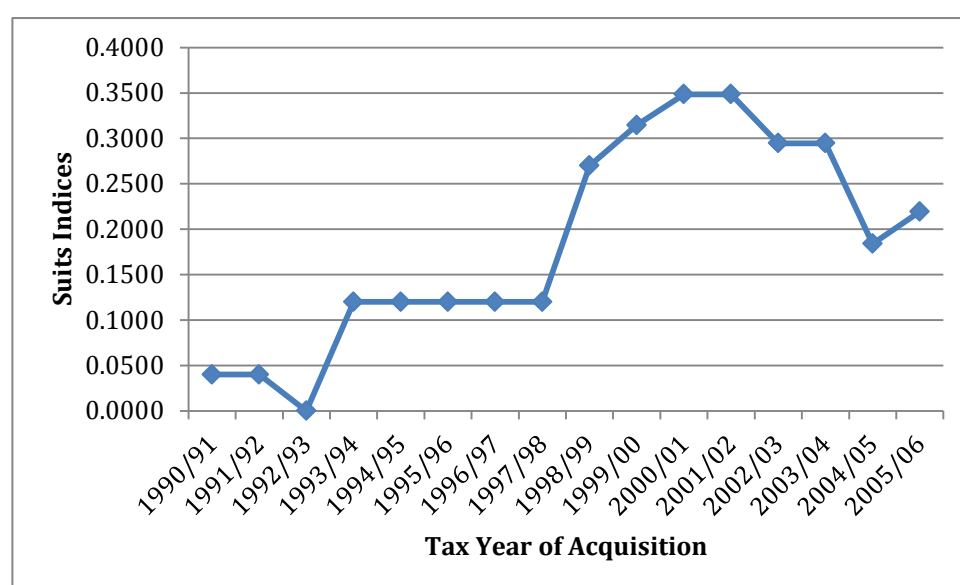
United Kingdom

Throughout the twenty-year period of study the UK stamp duty on property transactions remains a progressive type of taxation with at least two rates of tax. In the first eight years of the study (1990 through 1997) the only two tax rates are 0% and 1%. By the end of the study (2009) there are four rates of tax: 0%, 1%, 3% and 4%. The introduction of two more bands of taxation makes the stamp duty (land tax) characteristically more progressive and arguably more vertically equitable.

The Suits indices highlight the effects the introduction of additional tax bands and the subsequent increases in tax rates have had on the progressivity of the UK

acquisition tax system. With reference to Figure 8.6 below, the reader will note the three periods of stability where the S indices do not fluctuate – 1990/91 and 1991/92 when the index is 0.0400, 1993/94 through 1997/98 when it is 0.1200 and finally in 2001/02 and 2002/03 when it is 0.2945. 1992/93 is the year in which no case family reaches the taxing threshold of £250,000. In the year's 1999/00 through 2001/02, there are notable increases to the S indices. These are the result of increases to the higher STLT rates to which the highest income earners / property investors (UK-H5 and UK-TL5) are subject. Then in 2002/03 there is a drop as a result of the average earners / investors (UK-H1 and UK-TL1) reaching the first tax band. The other notable drop is in 2004/05 when the second highest earners / investors (UK-H4 and UK-TL4) reach the higher tax threshold.

Figure 8.6. The trend of Suits indices for UK acquisition taxation



Appendix VI (Chapter 8 Figures), page 563.

The increases and decreases in the indices themselves leads one to conclude there are corresponding increases and decreases in the levels of progression. This is true taking the population's results as a whole as is done with this distributional measure of progression. The ARP indices also indicate a progressive form of taxation when the overall progression is measured from the lowest (UK- ½) to the highest (UK-5). When detail is distinguished by an analysis at each interval of taxation with respect to this structural measure, progression is clearly identified where the next successive family falls within a higher tax band but proportionality is otherwise indicated. It

remains the case however, that the stamp duty (land tax) is a progressive form of taxation by definition.

United States

Given the assumption of one acquisition tax rate (0.005%) with no provision for exemption, the acquisition tax system assumed in the simulations is strictly proportional. Therefore, there is no vertical equity in terms of differentiations between those of different levels of income and investment.

Conclusions, comparisons and contrasting results

The higher tax rates introduced into the UK acquisition tax system from July 1997 for property investors increases vertical equity in that the system becomes more progressive. This is clearly illustrated in Figure 8.6 on the previous page. The UK investors in stocks and shares are consistently assessed under a proportional tax system. Similarly, the US acquisition tax system for investors in real estate is assumed constantly proportional in the modified simulation. Thus, the improvements in vertical equity for the UK investors in real property as a result from the changes in the relevant legislation are that much more pronounced when compared to the static tax systems applicable to the UK alternative investors and the US property investors.

The effective tax rates discussed in the preceding section on horizontal equity also highlight the vertical equity effect of higher statutory rates on UK real property. The rates are significantly higher when compared with the effective rates deduced under the original simulation given the relatively short period of investment associated with the modified simulation in that far less equity has been invested. The effective tax rates ranged from 0% to 12.2% for UK property investors at various levels of income and investment while remaining constant at 2.0% for all US property investors. The differentials between the property investors and the alternative investors therefore ranges from -0.5% to +11.7% in the UK and at 2% for all US property investors. This is deduced by subtracting the effective tax rates realised by the respective alternative investors (i.e. 0.5% in the UK and 0% in the US at every level of income) from the effective rates applicable to the corresponding property investors.

8.1.2. Property taxes

In the original simulation, property taxation is calculated on an appreciating tax base with regard to the relevant tax legislation each year. Therefore the reform to the UK property tax legislation is adequately reflected in the original simulation and fully discussed in earlier chapters. As with the US acquisition tax, the US property tax is a representative construct which does not alter during the time frame studied. The modified simulation for trend analysis therefore uses the same tax liabilities as calculated under the original simulations. While this does not offer new insight into either country's property tax system, it is necessary to consider total property tax liabilities for each of the sixteen 5-year time intervals for the ultimate objective of analysing the horizontal and vertical equity trends of the overall tax obligations. Therefore this section only briefly discusses the reform of the UK property tax and the assumptions made with regard to the US property tax in this study as these are fully discussed in Chapter 3 (Country Summaries), Chapter 5 (An evaluation of horizontal equity), and Chapter 6 (An evaluation of vertical equity).

In the modified simulation for trend analysis, recurring taxes (i.e. property and income taxes) are reflected on sixteen 5-year rolling intervals falling within the twenty years studied. Beginning in the first year of study (1990), an investment is purchased at the beginning of the tax year, held for five years (less one day) and therefore sold at the end of the fourth tax year. The assumptions are repeated for each subsequent year, ending with the final purchase in 2005 and the corresponding final sale in 2009 (e.g. sixteen total possible intervals). The property taxes are not recalculated, but grouped according to the intervals and the sum of the five years' tax liabilities are deduced and discussed on equity grounds.

Horizontal Equity

It is concluded in Chapter 5 that complete horizontal equity exists between the three investors in their respective country's tax systems with the exception of the lowest US homeowner occupier (US-H½) who received small tax concessions in the first six years of the study (e.g. total value of \$589).

United Kingdom

During the time frame studied, the Community Charge (Poll Tax) was replaced with the Council Tax. The first three years of simulation reflected a flat tax liability akin to the Community Charge. From 1993/94 onward, a representative Council Tax is simulated. As noted in Section 5.1.2 of Chapter 5 (An evaluation of horizontal equity), both taxes are levied on the occupants of property, whether owner-occupiers or tenants of rental properties. Therefore complete horizontal equity exists between equivalent investors, regardless of their investment choice as reflected in Table 8.4 on the next page.

United States

Like acquisition taxes, property taxes are administered at the state and local government levels within the US. A set of policies and rates comparable to the national averages throughout the period of study are assumed in the simulations.³⁶¹

The property taxes incurred by individuals investing in a home for occupation or for rental investment purposes are the same with the exceptions of the first six 5-year time periods that reflect any of the first six years when the homeowner with the lowest income and investment (US-H½) realised small reductions in their liabilities. Therefore, Table 8.4 recognises 20 occurrences of inequities³⁶² favouring the homeowner and 380 occurrences of horizontal equity.

Consideration for the tax incidence of property taxation guides the analysis of horizontal equity between homeowners and alternative investors. If the focus were confined to the first-round effects with formal tax incidence, then significant inequities favouring the alternative investors would be reported. However, the user-cost framework in which this research is set requires consideration for the capitalised cost of property taxation within rents. Effectively, the tenants of rental properties pay the property taxes through their rental expense. This being assumed, there is horizontal equity between homeowners and alternative investors with the exception

³⁶¹ The reader is referred to Chapters 3 (Country Summaries) and 4 (Methodology) for a discussion on the US property tax system and the assumptions made in the US simulation.

³⁶² The reader is reminded that the methodology applied in this section is a 5-year rolling method. Therefore 1994 will be reflecting in five 5-year intervals (e.g. 1990-1994, 1991-1995, 1992-1996, 1993-1997 and 1994-1998). Hence, 20 occurrences stem from six years.

of the first six time periods when the lowest tiered homeowners (US-H^{1/2}) received relatively small tax concessions in contrast to investors in rental real estate. The numbers of horizontal equity occurrences in the US simulation are the same whether the homeowners are being compared with alternative investors or tenant / landlords as reflected in Table 8.4.

Table 8.4 **Equity frequencies (property taxes)**

Property taxes: comparison between countries and investors			
Country and Investors	Horizontal Equity	Horizontal Inequity (favouring the homeowner)	Horizontal Inequity (favouring the alternative investor)
UK-A	400	0	0
US-A	380	20	0
UK-T	400	0	0
US-T	380	20	0

Source: Worksheet VI (Horizontal Analysis), V-X136.

Conclusions, comparisons and contrasting results

As established in Chapter 5 (An evaluation of horizontal equity), complete horizontal equity exists between all three investors in the United Kingdom, as the property tax obligation is the onus of the occupant and not the owner of the property.

In stark contrast, the majority of states in the US administer a property tax that is the responsibility of the property owners. In spite of the differences in formal incidence between the two countries, horizontal equity also exists in the US given consideration for the economic incidence of such taxation. It is assumed that the obligations of this tax, as well as all other user-costs associated with a rental property, are passed on to the tenants (occupiers) of the property. With the exception

of small tax concessions available to homeowner occupiers in the six early years of the study, complete horizontal equity exists between the three US investors as well.

Vertical equity

It is established through structural and distributional analyses in Chapter 6 (An evaluation of vertical equity) that both the UK Community Charge and the succeeding UK Council Tax were/are regressive forms of taxation. The former was more regressive than the latter, given that the Community Charge was a flat tax applicable to all and the Council Tax has been assessed with reference to eight bands of housing valuation since its inception. The annual Suits indices are -0.3840 under the Community Charge and -0.1892 under the Council Tax. The S index calculated on twenty years' cumulative income and tax obligations is -0.2004.

The US property tax system is assumed to be slightly progressive for the homeowner occupiers in the first six years of study and proportional thereafter. It is deemed proportional for the other US investors throughout the study.

It is concluded that the property tax system in the US is more vertically equitable in comparison with the UK system of property taxation. The slightly progressive and even proportional system of taxation is more equitable than the regressive forms of taxation administered in the United Kingdom.

United Kingdom

The Community Charge was a highly regressive form of taxation in that it was a flat tax applied regardless of ability to pay. Its replacement in 1993/94 – the Council Tax- is also a regressive form of taxation, but to a lesser degree in that there are eight bands of taxation. Like the stamp duty land tax, the council tax is a stepped system of taxation in that the applicable fraction of the tax as determined by the banding is applied rather than a progressive increase in tax rates to different slices of income.

With reference to the original simulation, the annual progressivity measures of the community charge yield S indices of -0.3840 for the first three years of the study. The annual measures of the council tax yield S indices of -0.1892 for the remainder of the study. Measures on the cumulative income and corresponding property taxes

for consecutive blocks of five years yield S indices of decreasing regressivity in the first three blocks as these include the early community charges, and then level off to the same -0.1892 S index from 1993/94 through 1997/98 onwards.

United States

The property taxes assumed incurred by the homeowner occupiers are slightly progressive in the beginning of the study when a relatively small concession is made for the lowest tiered homeowners (US-H^{1/2}). The effect of this concession is evident in the first six sets of five-year intervals ending with the period 1995-1999, 1995 being the last year of concession. For the remainder of the study the US property tax system is assumed to be completely proportional.

The concession is only available to investors in principal residences, therefore, complete proportionality is assumed throughout the study periods for both alternative investors and tenant / landlords.

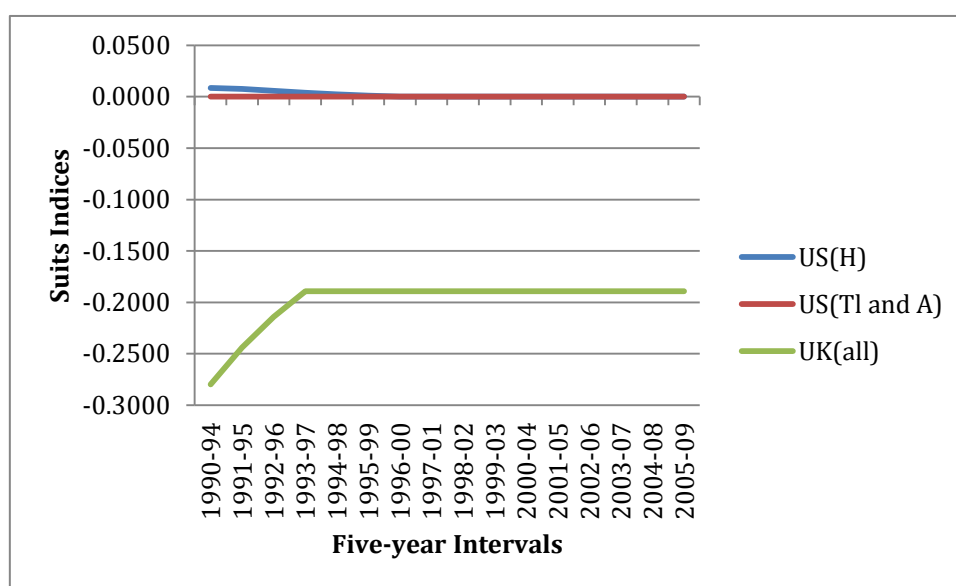
Conclusions, comparisons and contrasting results

As established in Chapter 6 (An evaluation of vertical equity), the US property tax system is more vertically equitable when compared to the two systems of taxation relevant to UK taxpayers within the twenty-year time frame studied. The modified simulation applicable herein does not produce new information with regard to the annual data. What has been established are the cumulative results for the sixteen 5-year intervals in monetary terms, as well as rates and indices. This information is necessary in establishing the measures of progression for trend analysis of the overall tax obligations.

The Suits indices for the three UK investors are -0.2798, -0.2441, -0.2140 for the three 5-year intervals 1990/91 to 1994/95, 1991/92 to 1995/96, and 1992/93 to 1996/97, respectively. The results of 1993/94 to 1997/98 and all subsequent intervals yield an S index of -0.1892; the same result as the respective annual calculations. The earlier variations are reflective of the time periods including the Community Charge, which is a significantly more regressive tax result affecting the cumulative measures.

The Suits indices for the US homeowner occupiers are 0.0085, 0.0076, 0.0056, 0.0037, 0.0022 and 0.0009 for the respective 5-year intervals 1990-1994 through 1995/99. Thereafter, the S indices are calculated to be nil, which is indicative of a proportional tax system, as expected. The S indices for the two other investors in the US are also nil. A comparison of the trends of progression is reflected in Figure 8.7.

Figure 8.7. The trend of the Suits indices for property taxation for all three investors in both countries



Appendix VI (Chapter 8 Figures), page 564.

While the UK tax system has become less regressive and the US tax system is mostly proportional, it is evident from the analysis involving S indices that the US tax system is more vertically equitable when compared with the UK tax system.

8.1.3. Income taxes

The relevant factors affecting income taxation in this study are the mortgage interest relief in both countries, the real estate tax relief in the US, the non-taxation of imputed rental income in either country and the respective tax treatments of rental income and losses (including the depreciation allowance in the US). As discussed in Chapter 5 (An evaluation of horizontal equity), there are significant changes affecting income taxation in both countries during the twenty-year time frame.

These changes are briefly recaptured in this section in order to set the modified simulation in context.

In the UK, Mortgage Interest Relief at Source (MIRAS) was eroded through rate restrictions and was finally abolished in 1999/00. In the US, the benefit from mortgage interest relief (and real estate tax relief) eroded by significant increases in the standard deduction. Other structural changes in the US regular and alternative minimum tax systems also impact the case families. The reader is referred to Chapters 3 (Country summaries) and 5 (An evaluation of horizontal equity) for a complete discussion on the respective country's income tax reforms.

The modified simulations recalculate the annual income taxes for the respective homeowner occupiers to reflect the changes in mortgage interest allowances as a result of the sixteen alternative dates of purchase and the modified levels of indebtedness in both countries, and the variations in interest rates specific to the UK case families.³⁶³ Further, the modified simulations recalculate the annual income taxes for the respective tenant / landlords to reflect changes in net rental income (or losses). The changes result from changes in mortgage interest allowances in both countries (for the same reasons as per the homeowner occupiers), and the changes in the depreciation allowances for the US case families.³⁶⁴

The primary objective of recalculating the income tax liabilities for all case families is to enable a rigorous review of the overall tax obligations in Section 8.1.5. Unlike the transaction taxes, the trends of the recurring taxes are apparent in the original simulation. However, to establish the impact of modifications and reforms to the specific tax systems on the overall tax obligations, it is necessary to consistently apply the modified simulation assumptions to each specific tax system. Therefore, while this section may not offer new insight into either country's income tax system, the results from the modified simulation are discussed in detail.

³⁶³ The reader is reminded that the level of indebtedness is a function of income, which is assumed to appreciate by 3% annually.

³⁶⁴ The reader is reminded that depreciation is calculated on the acquisition value of the rental property, which is a function of the appreciating income.

Horizontal Equity

Chapter 5 establishes horizontal inequities at every level of income and investment in every year studied between the US homeowner occupiers and the tenant / landlords. The favouritism is dependent on whether the homeowner occupiers are able to claim itemized deductions (i.e. mortgage interest and real estate taxes paid) in excess of the statutory standard deduction and whether net rental income or losses are recognised by the tenant / landlords in a given year. The lowest tiered homeowner occupiers (US-H¹/₂) do not itemize their deductions at all and the next lowest homeowner (US-H1) benefit slightly until 1996. The respective tenant / landlords (US-TL¹/₂ and US-TL1) realised net rental losses from 1990 through 2003. Therefore the favouritism rests with the tenant / landlords at this level of income and investment until 2004, when net rental income realised by these families tip the favouritism toward the respective homeowner occupiers. At the higher levels of income and investment (US-H2, US-H4 and US-H5), homeowner occupiers are able to significantly reduce their income tax liabilities through the marginal relief on the mortgage interest and real estate tax deductions. These exceed any rental losses realised by the respective tenant / landlords in the earlier years of study.

The UK tax system favoured homeowner occupiers with MIRAS in the first half of the study (e.g. until 1999/2000 when it was abolished). The favouritism however, is far less significant than the favouritism realised by the respective higher earning / investing US case families.

United Kingdom

The annual computations of the homeowner occupiers' and alternative investors' income tax liabilities are unchanged by the five-year rolling methodology. With regard to the tenant / landlords however, the rental income computations differed greatly from the original simulation as a result of the functional relationship of the rents and corresponding expenses to increasing income.³⁶⁵

³⁶⁵ The reader is reminded that rental income is assumed to be 5.5% of the annual house value and that such valuation is assumed to increase 3% each year. Further, the relevant mortgage interest is dependent on the prevailing interest rates in any given period (i.e. the mortgage terms are assumed to reflect a tracker mortgage where 1% interest above the national rate is assessed). The applicable indebtedness is dependent on the house value in a given acquisition year. Finally, maintenance is

The horizontal inequities favouring the homeowner occupiers due to MIRAS are still present in the first half of the study period under the modified simulation with a five-year rolling methodology. With regard to the comparisons between homeowner occupiers and alternative investors, this results in 200 occurrences of horizontal inequity favouring the homeowner occupiers and 200 occurrences of complete horizontal equity as depicted in Table 8.9 on page 414. The income tax differentials for each level of investment for each five-year period analysed are reflected in Table 8.5. The negative amounts reflect the cumulative income tax subsidies realised by the homeowner occupiers at five-year intervals with regard to MIRAS. The decline in the benefit due to its phasing out through rate restriction³⁶⁶ is apparent from the beginning of the study though the five-year interval, 1995/96-1999/00.

Table 8.5 Differences in income taxes paid between UK homeowners and alternative investors (negatives differences reflect homeowner benefits)

5-year Intervals	Levels of Income and Investment:				
	(UK-5)	(UK-4)	(UK-2)	(UK-1)	(UK-½)
	pp 611-614	pp 607-610	pp 603-606	pp 599-602	pp 595-598
90/91-94/95	-4,294	-4,294	-4,294	-3,600	-2,040
91/92-95/96	-2,710	-2,710	-2,710	-2,710	-1,582
92/93-96/97	-2,142	-2,142	-2,142	-2,142	-1,288
93/94-97/98	-1,810	-1,810	-1,810	-1,810	-1,121
94/95-98/99	-1,566	-1,566	-1,566	-1,566	-999
95/96-99/00	-1,369	-1,369	-1,369	-1,369	-899
96/97-00/01	-1,046	-1,046	-1,046	-1,046	-708
97/98-01/02	-747	-747	-747	-747	-521
98/99-02/03	-407	-407	-407	-407	-292
99/00-03/04	-176	-176	-176	-176	-130
00/01-04/05	0	0	0	0	0
01/02-05/06	0	0	0	0	0
02/03-06/07	0	0	0	0	0
03/04-07/08	0	0	0	0	0
04/05-08/09	0	0	0	0	0
05/06-09/10	0	0	0	0	0

Appendix VII (Summaries of Differences in Specific and Overall Taxes), various pages referenced.

0.5% of the annual house value. The reader is referred to Chapter 4 (Methodology) for more information on the user-cost framework assumed in this study.

³⁶⁶ The reader is referred to Section 3.1.1 of Chapter 3 (Country Summaries) for a synopsis of the MIRAS benefit rate restrictions that occurred in the 1990s.

The inequities favouring the homeowners as a result of the tenant / landlords' recognising net rental income occur one year later in this study as compared with the original simulation. Within the five-year period 1998/99 to 2002/03 is the first year in which the rental income exceeds the allowable expenses for the tenant / landlords (e.g. 2002/03). The following block of five years (e.g. 1999/00 to 2003/04) result in net rental income being recognised in three of the years. Four years of recognised net rental income occur in the five-year block 2000/01 to 2004/05. For the next five blocks of five years, rental income is recognised in all five years. The end result is 165 occurrences of horizontal inequities favouring the homeowners in addition to the 200 occurrences of inequities due to MIRAS. Table 8.9 on page 414 reflects the equity frequencies with regard to comparing the income tax liabilities of homeowner occupiers and alternative investors and homeowner occupiers and the tenant / landlords.

The income tax differentials between the homeowner occupiers and the tenant / landlords for each level of investment for each five-year period analysed are reflected in Table 8.6 on the next page. The reader will note that differences in Tables 8.5 and 8.6 do not occur until the 1998/99-2002/03 interval³⁶⁷, when net rental income is realised by the tenant / landlords. Prior to that period, the two investors share a common difference with the homeowner occupiers, which is MIRAS.

The rise in the homeowner occupiers' income tax advantages over the tenant / landlords in the second half of the study are attributed to the rise in net rental income taxable to the latter and not the former. The simulated net rental income increases annually as a result of (1) the appreciating investment base on which rents are assumed, and (2) the falling national interest rates on which the deduction for interest expenses are assumed.

³⁶⁷ A horizontal line is drawn through the two tables at the point in which variations occur.

Table 8.6 Differences in income taxes paid between UK homeowners and tenant / landlords (negatives differences reflect homeowner benefits)

5-year Intervals:	Levels of Income and Investment:				
	(UK-5)	(UK-4)	(UK-2)	(UK-1)	(UK-1/2)
	pp 635-638	pp 631-634	pp 627-630	pp 623-626	pp 619-622
90/91-94/95	-4,294	-4,294	-4,294	-3,600	-2,040
91/92-95/96	-2,710	-2,710	-2,710	-2,710	-1,582
92/93-96/97	-2,142	-2,142	-2,142	-2,142	-1,288
93/94-97/98	-1,810	-1,810	-1,810	-1,810	-1,121
94/95-98/99	-1,566	-1,566	-1,566	-1,566	-999
95/96-99/00	-1,369	-1,369	-1,369	-1,369	-899
96/97-00/01	-1,046	-1,046	-1,046	-1,046	-708
97/98-01/02	-747	-747	-747	-747	-521
98/99-02/03	-1,310	-1,129	-768	-506	-342
99/00-03/04	-2,565	-2,087	-1,131	-439	-261
00/01-04/05	-2,826	-2,261	-1,131	-311	-155
01/02-05/06	-3,571	-2,857	-1,428	-393	-196
02/03-06/07	-3,670	-2,936	-1,468	-404	-202
03/04-07/08	-2,999	-2,399	-1,200	-330	-165
04/05-08/09	-2,944	-2,356	-1,178	-311	-156
05/06-09/10	-5,300	-4,065	-2,032	-517	-259

Appendix VII (Summaries of Differences in Specific and Overall Taxes), various pages referenced.

While direct comparisons of the horizontal inequities from income taxation under the two different methodologies are not possible, general observations are. The amount of net rental income realised by the tenant / landlords is less in the five-year rolling methodology than that realised under the original simulation. This is due to the frontloading effect of the mortgage interest. The first year in which rental income is recognised by the tenant / landlords under the original simulation is 2001/02, and under the five-year rolling simulations, it is 2002/03. While these differences are not tax related, they are worth noting before the analysis turns to the vertical equity.

United States

The horizontal inequities in the US income tax system between the homeowner occupants and the alternative investors is attributed to the ability of the homeowners to deduct more than their standard deduction by way of itemized deductions, thus reducing their taxable income. Mortgage interest and real estate taxes paid by homeowners are often the most significant deductions allowed.

As in the original simulation, whether or not a particular homeowner is indeed favoured in the income tax system depends on whether or not they are able to exceed

their standard deduction with allowable expenses. The lowest tiered homeowner occupier (US-H½) does not claim itemized deductions at any point during the study. However, since 2008, the standard deduction may be increased by the real estate taxes paid by the taxpayer(s) up to and additional \$1,000. This results in horizontal inequities favouring the homeowner in 2008 and 2009 at the lowest tier of income and investment. The number of occurrences of inequities favouring this particular homeowner is therefore 3 (two years with 2008 falling within two time periods, 2004-2008 and 2005-2009).

The median income earner and investor (US-H1) itemizes their deductions from 1990 through 2002, thereby realising lower income tax obligations as compared with the alternative investor. However, towards the end of the time frame studied, the standard deductions tend to exceed itemized deductions. As a result there are occasions of horizontal equity between the median-income-level homeowners and alternative investors with the earlier noted exception of the last two years when the standard deductions are increased by a maximum of \$1,000 for real estate taxes paid. The number of occurrences of inequities favouring homeowner is 65 while horizontal equity is realised on 15 occasions.

The remaining levels of income and investment (US-H2, US-H4, and US-H5) all benefit from itemizing deductions, therefore the remaining 240 occurrences reflect horizontal inequities favouring homeowners over alternative investors. The total frequency results are reflected in Table 8.9 on page 414.

The income tax differentials between homeowner occupiers and alternative investors at each level of investment for each five-year period analysed are reflected in Table 8.7. The significant vertical inequity coupled with the horizontal inequities are evident in this table where the families invested at the higher levels (i.e. two, four and five times the median investment) respectively yield, on average, 22, 68 and 98 times the tax subsidy realised by the median case family (US-H1). However, this will be explained more fully in the next section; the focus of this section remains on the horizontal inequities.

Table 8.7 Differences in income taxes paid between US homeowners and alternative investors (negatives differences reflect homeowner benefits)

5-year Intervals:	Levels of Income and Investment:				
	(US-5)	(US-4)	(US-2)	(US-1)	(US-½)
	pp 659-662	pp 655-658	pp 651-654	pp 647-650	pp 643-646
1990-94	-42,718	-31,910	-10,442	-570	0
1991-95	-43,436	-32,086	-10,666	-547	0
1992-96	-45,441	-33,007	-10,949	-548	0
1993-97	-46,231	-33,093	-11,293	-572	0
1994-98	-46,945	-33,184	-11,654	-602	0
1995-99	-48,666	-34,257	-12,048	-643	0
1996-00	-50,717	-35,525	-12,542	-716	0
1997-01	-52,617	-36,685	-12,983	-778	0
1998-02	-55,497	-38,663	-13,383	-840	0
1999-03	-57,656	-39,766	-13,243	-794	0
2000-04	-58,926	-40,485	-13,074	-686	0
2001-05	-60,209	-41,103	-12,795	-504	0
2002-06	-61,759	-41,126	-12,531	-304	0
2003-07	-63,557	-41,366	-12,248	-110	0
2004-08	-66,258	-42,588	-12,699	-281	-64
2005-09	-70,391	-44,879	-13,067	-341	-95

Appendix VII (Summaries of Differences in Specific and Overall Taxes), various pages referenced.

The variations in US income tax liabilities between homeowner occupiers and tenant / landlords depends on whether the homeowners are able to itemize their deductions, and whether the tenant / landlords have recognisable income or losses from their rental activities. Under the five-year rolling methodology employed in this phase of analysis, rental losses are realised each year throughout the study's time frame. This is primarily the result of the significant deductions for interest expense due to frontloading. A contributing factor is larger depreciation deductions calculated on the appreciating house values.

As is the case between the higher tiered homeowner occupiers and alternative investors, when compared with the tenant / landlords, the homeowners are favoured with respect to the income tax system. This is due to the recognised itemized deductions of the homeowners exceeding any losses recognised in full with regard to US-TL2, and in part with regard to US-TL4. The highest tiered tenant / landlord (US-TL5) is unable to recognise losses due to the passive active loss rules. The result is 240 occurrences of horizontal inequity favouring the homeowner occupiers at these three levels of income and investment.

The median income earner and investor in rental real estate (US-TL1) is able to fully recognise rental losses throughout the time frame studied. These exceed the itemized deductions realised by the homeowner occupier of equal circumstance (US-H1). The result is 80 occurrences of in horizontal inequities favouring the alternative investor.

As established earlier, the lowest tiered homeowner occupier (US-H½) does not benefit from itemizing deductions with the exception of the last two years when real estate tax deductions are allowed (to a maximum of \$1,000) in excess of the standard deduction. However, an even greater tax concession is realised by the equivalent tenant / landlord (US-TL½) as they are able to offset taxable income throughout the entire time frame studied with full rental losses. Therefore, there are 80 occurrences of horizontal inequities favouring the tenant / landlords at this level of income and investment, regardless of the real estate tax concession available to the homeowner occupiers in 2008 and 2009. The total frequency information is summarised in Table 8.9 on the next page and the inequities are quantified in Table 8.8 below.

Table 8.8 Differences in income taxes paid between US homeowners and tenant / landlords (negatives differences reflect homeowner benefits)

5-year Intervals:	Levels of Income and Investment:				
	(US-5)	(US-4)	(US-2)	(US-1)	(US-½)
	pp 683-686	pp 679-682	pp 675-678	Pp 671-674	pp 667-670
1990-94	-22,120	-15,948	-2,556	1,543	711
1991-95	-22,291	-15,905	-2,574	1,620	634
1992-96	-24,758	-16,168	-2,630	1,681	613
1993-97	-27,429	-16,844	-2,724	1,723	648
1994-98	-28,142	-17,710	-2,829	1,762	695
1995-99	-29,562	-18,655	-2,958	1,792	791
1996-00	-31,148	-19,696	-3,112	1,810	886
1997-01	-32,644	-20,325	-3,235	1,841	962
1998-02	-36,822	-23,487	-3,341	1,876	974
1999-03	-41,240	-26,124	-3,205	1,975	841
2000-04	-43,166	-26,954	-2,716	2,228	695
2001-05	-45,893	-28,742	-2,378	2,497	530
2002-06	-49,082	-29,843	-1,856	2,793	359
2003-07	-52,615	-31,183	-1,553	3,076	255
2004-08	-55,432	-32,643	-1,756	3,006	222
2005-09	-59,119	-35,106	-1,802	3,007	163

Appendix VII (Summaries of Differences in Specific and Overall Taxes), various pages referenced.

Table 8.9 Equity frequencies (income taxes)

Income taxes: comparison between countries and investors			
Country and Investors	Horizontal Equity	Horizontal Inequity (favouring the homeowner)	Horizontal Inequity (favouring the alternative investor)
UK-A	200	200	0
US-A	92	308	0
UK-T	35	365	0
US-T	0	240	160

Source: Worksheet V (Overall Taxes (Absolute £)), AG-AH1238.

Conclusions, comparisons and contrasting results

On comparing the two country's absolute income tax differentials in the original simulation, Chapter 5 (An evaluation of horizontal equity) establishes the fact that the US income tax system favours the higher tiered homeowner occupiers (US-H4 and US-H5) and the UK income tax system favours the lower three homeowner occupiers (UK-H½, UK-H1 and UK-H2) over the respective tenant / landlords.³⁶⁸

When a five-year rolling methodology is employed and the mortgage interest and rental income (losses) are significantly affected by frontloading, the results are somewhat varied at the level of twice the median income. When the monetary values are compared (assuming a common currency), the US homeowner occupiers (US-H2) are favoured between the five-year intervals 1994-98 through 2001-05. The UK homeowner occupiers (UK-H2) are favoured before and after these intervals. The lower tiered UK homeowner occupiers (UK-H½ and UK-H1) are favoured for all sixteen 5-year intervals whereas the higher tiered US homeowner

³⁶⁸ The reader is referred to Table 5.14 in Chapter 5 for a comparison of the income tax differentials between homeowner occupiers and tenant / landlords in absolute monetary terms using a common currency (UK£).

occupiers (US-H4 and US-H5) are favoured throughout the time frame studied. This is due to the distribution of the mortgage interest relief in both countries and the fact that the UK does not allow rental losses to offset ordinary income while the US does under set conditions.

On comparing the results of homeowner occupiers and alternative investors, in the original simulation the median income earner and investor invested in a US home (US-H1) does not itemize deductions after 1996 because they are unable to exceed the applicable standard deductions in all subsequent years (with the exception of the last two years with regard to the small real estate tax concession). In the 5-year rolling methodology, this case family is able to continue to claim itemized deductions until 2003, when none are claimed until the last two years. Regardless, the benefit realised by the mortgage interest relief in the UK exceeds the relief claimed within the US for the respective case family at the median income level. Therefore, the favouritism rests with the median UK homeowner occupiers (UK-H1) until 1998-02 when it then favours the median US homeowner occupier (US-H1) for the remaining 5-year intervals. With regard for the lowest tiered US homeowner occupiers, as they are unable to claim itemized deductions in any year barring the last two, there is favouritism towards the UK homeowner occupiers in the years in which MIRAS is allowed and then with the US homeowner occupier (US-H½) in the last two intervals (2004-08 and 2005-09).

The horizontal inequities in both countries are illustrated in the following line graphs in which the average income tax rates of all three investors are depicted. The cumulative income tax for all five case families for all five years in each interval is related to the cumulative income for the same. Figure 8.8 reflects the trend of UK average income tax rates over the study period whereas Figure 8.9 reflects the US average income tax trend. Less horizontal inequity is clearly depicted in the UK income tax system in comparison with the US income tax system.

Figure 8.8. The trend of the average tax rates for UK income taxation for all three investors during the entire period studied

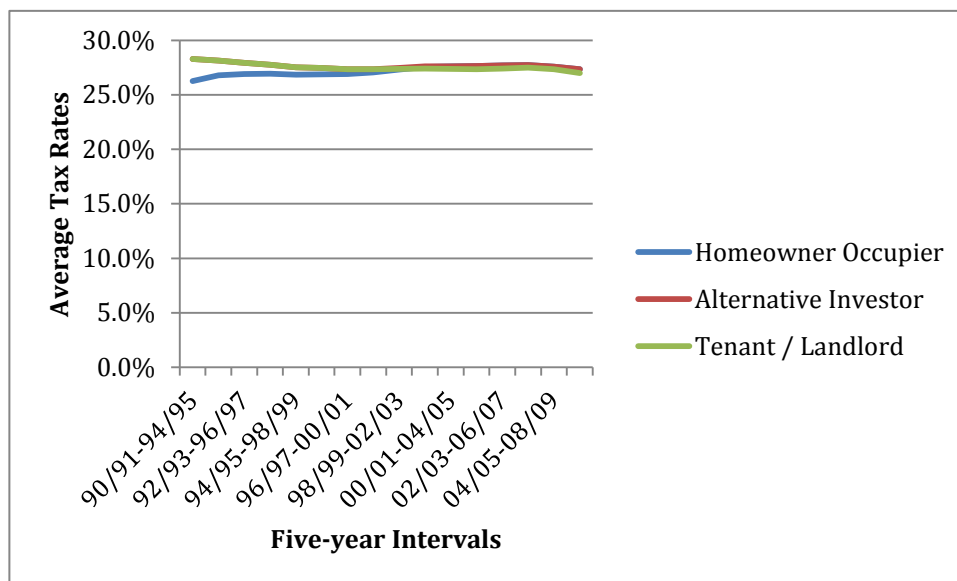
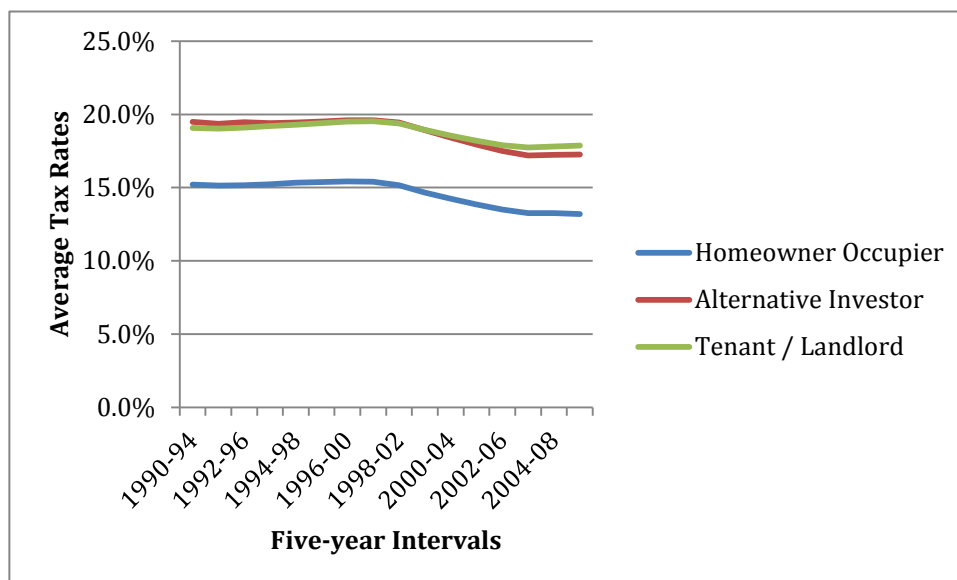


Figure 8.9. The trend of the average tax rates for US income taxation for all three investors during the entire period studied



Appendix VI (Chapter 8 Figures), pages 565 and 566, respectively.

Vertical equity

Chapter 6 (An evaluation of vertical equity) established that the regressive distributional effect of the UK mortgage relief improves the progressivity of the respective income tax system. Conversely, the progressive distributional effect of the US mortgage interest relief reduced the progressivity of the respective income tax system.

Further, the UK tenant / landlords experience a lower progressivity when compared with the alternative investors by utilising the non-working spouse's personal allowance and lower tax bands for the jointly earned rental income. The US tenant / landlords as a whole, with regard to the original simulation, experience a greater degree of progressivity as a result of higher average tax rates in the years in which net rental income is realised, and lower average tax rates for the lower tiered tenant / landlords when net rental losses are allowed.

United Kingdom

The trends of the average tax rates for all UK case families are depicted in Figure 8.10.

Figure 8.10. The trends of the average tax rates for UK income taxation for homeowners at each level of income during the entire period studied

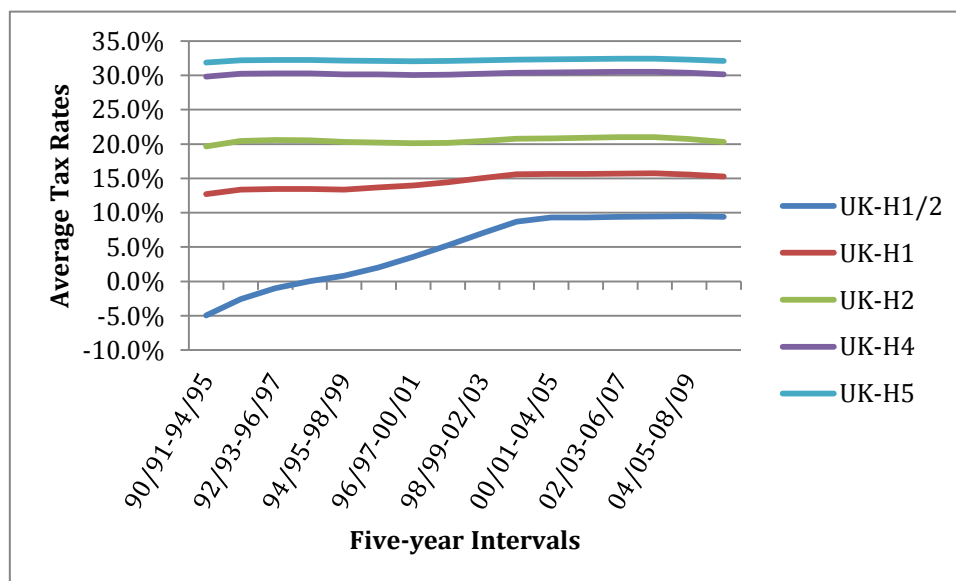
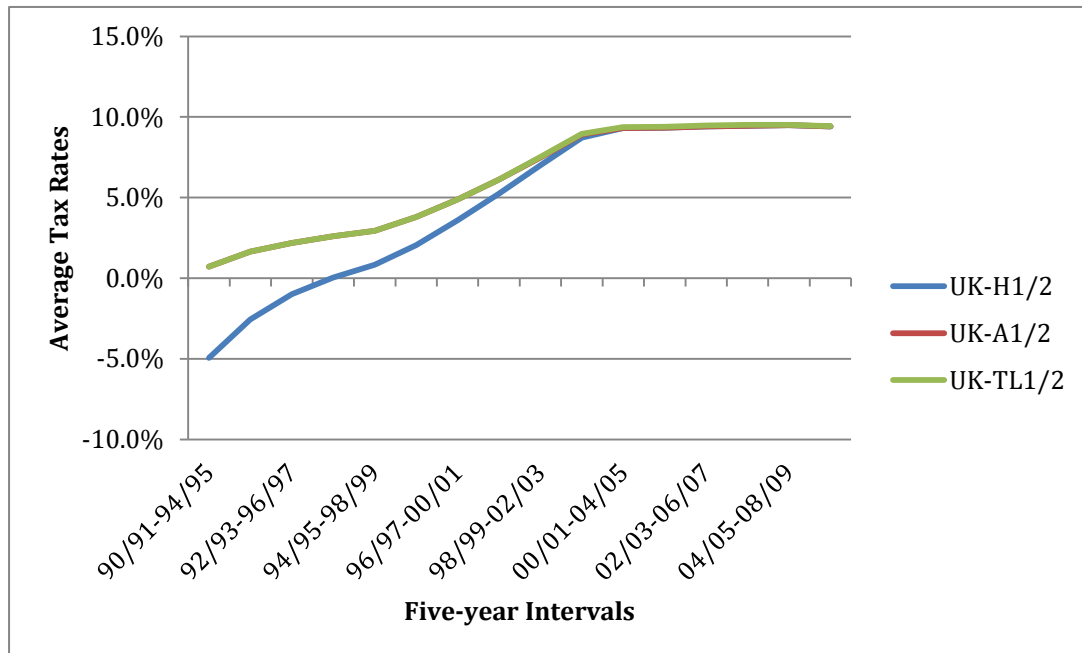


Figure 8.11 shows the variations in average tax rates between the UK homeowner occupiers, the alternative investors and the tenant / landlords at the level of income and investment (UK-1/2) for the entire period studied. The variations for the other case families at the next four levels of income and investment are reflected in Figures 8.12 through 8.15 on the next page³⁶⁹. The reader will note that the variations of highest tiered families (UK-5) mimic the next highest level (UK-4).

While the lowest tiered investors depict a much more pronounced change in the average tax rates throughout the period studied, changes have occurred for all case families at all levels of income and investment during the twenty-year period. This is not apparent from the scale of Figure 8.10, but clearly reflected in the subsequent figures where the scale is accentuated.

Figure 8.11. The trend of the average tax rates for UK income taxation for the three investors at the lowest level of income during the period studied



³⁶⁹ These Figures are underpinned by the data reflected in Appendix VI (Chapter 8 Figures), pages 569 – 572.

Figure 8.12. **ATRs for UK-1 families**

Figure 8.13. **ATRs for UK-2 families**

Figure 8.14. **ATRs for UK-4 families**

Figure 8.15. **ATRs for UK-5 families**

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Figure 8.12 : ATRs for UK-1 families

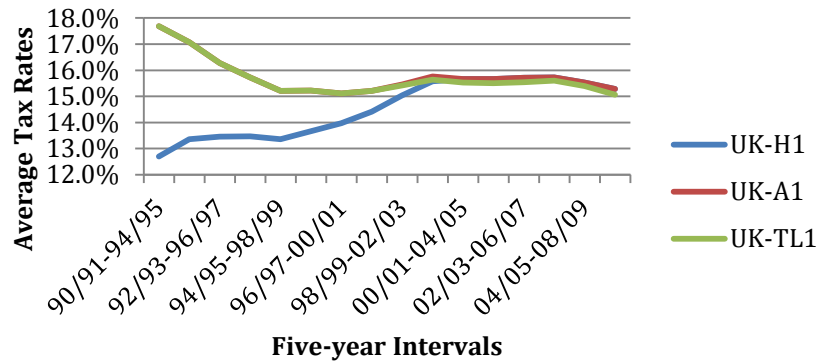


Figure 8.13 : ATRs for UK-2 families

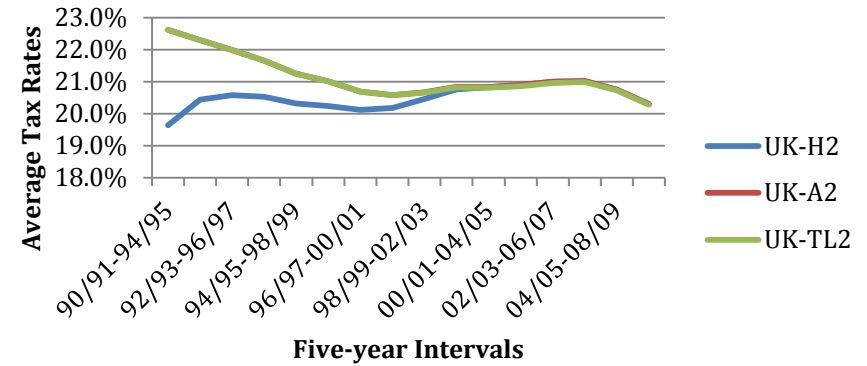


Figure 8.14 : ATRs for UK-4 families

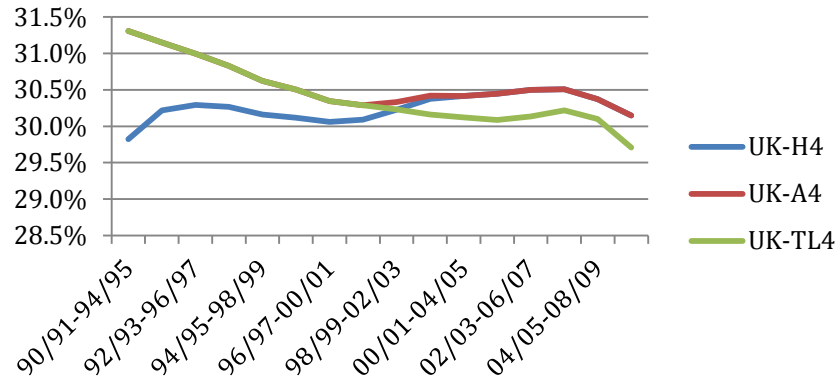
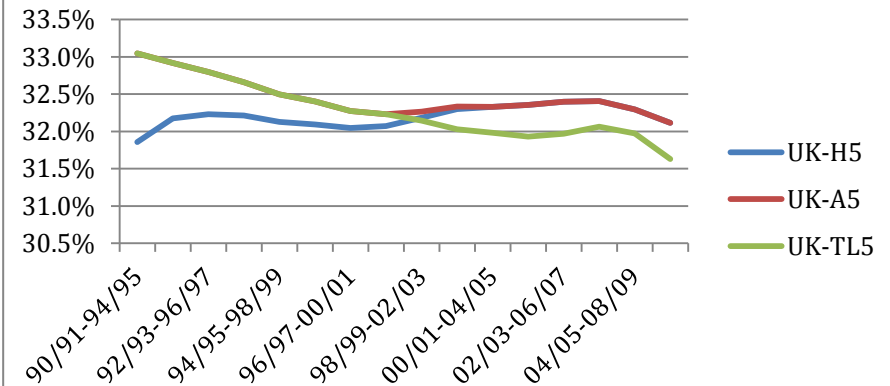


Figure 8.15 ATRs for UK-5 families



The average income tax rates of the alternative investors at the median and twice the median income levels (UK-A1 and UK-A2) dropped more than two percentage points from the first five-year interval to the last. The higher tiered alternative investors (UK-A4 and UK-A5) have approximately a one per cent drop in the average income tax rates. The tenant / landlords' ATR reductions are even greater at these levels of income and investment. Conversely, the lowest tiered other investors (UK-A½ and UK-TL½) rise 8.7% from the first five-year interval to the last. This is the result of the phasing-out of the married couples allowance and the significant reduction in the lower tax band that occurred in 1999/00.

The homeowner occupiers experienced even greater variations given MIRAS in the early years. The average rate progression indices based on the five-year cumulative income and tax obligations confirm the results obtained in the original simulation in that the greatest amount of progressivity rests between the two lowest tiered investors (UK-½ and UK-1).

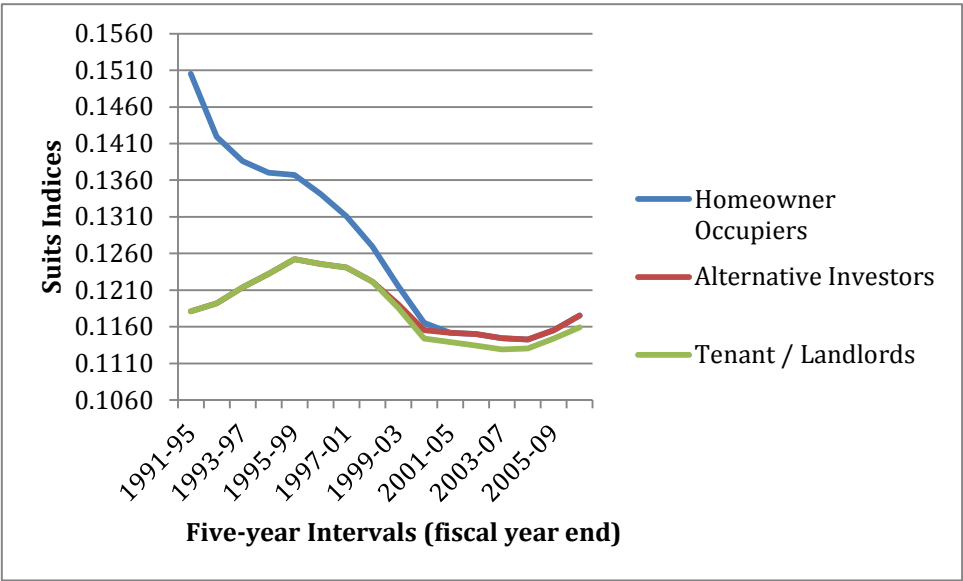
The Suits indices as determined by the five-year cumulative income and corresponding income tax data relative to the homeowner occupiers for the sixteen blocks of five years show a noticeable decline as the benefit of MIRAS eroded and finally disappeared. There follows a period of more moderate decline until the last two sets of five years when there are slight increases in the progressivity measures. This is reflected in Figure 8.16 on the next page. The annual S index computations provide some insight into this trend. The progressivity increased significantly in the last two years of the study as a result of the abolishment of the starter rate band coupled with a significant increase in the personal allowances (16% increase from 2007/08 to 2008/09). There are moderate increases to progressivity noted in three other years, and two other significant increases in 1996/97 and 1997/98, as a result of increases to the starter band and personal allowance. These increases however, do not affect the general trend of decline as determined by the progressivity measures on cumulative income and tax data within the respective five-year intervals as illustrated in Figure 8.16.

The Suits indices for the alternative investors and the tenant / landlords are the same for the five-year periods ending 2001/02 during which time the tenant /landlords

realised net rental losses. Once net rental income is recognised from 2002/03 onwards, the indices deviated with lower measurements for the tenant / landlords.

The S indices as calculated for the homeowner occupiers and the alternative investors are the same from 2000/01 onwards as the deviations due to the cessation of MIRAS benefits. The trends of UK income tax progression based on S indices for all three investors are reflected in Figure 8.16.

Figure 8.16 The trend of the Suits indices for UK income taxation for all three investors



Appendix VI (Chapter 8 Figures), page 573

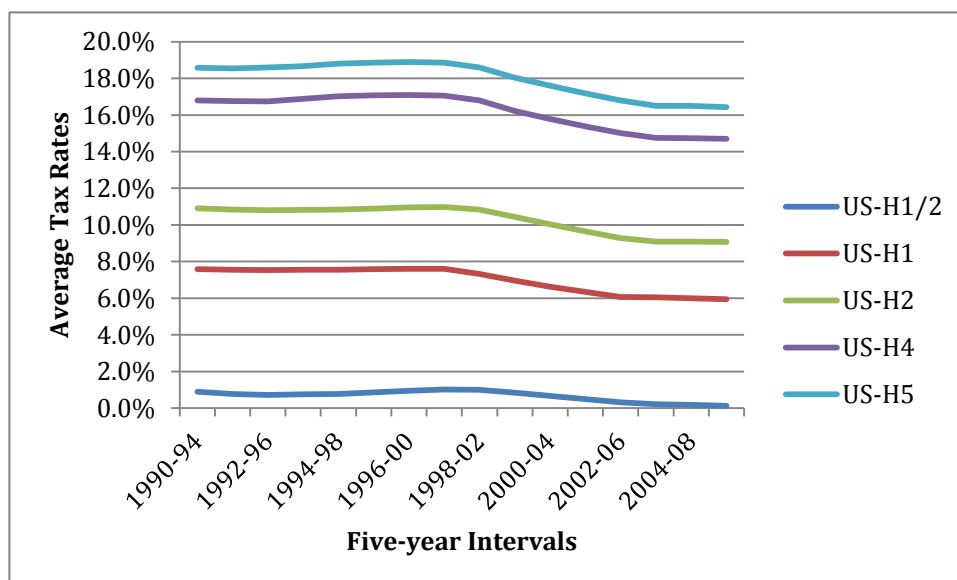
In conclusion, the erosion and abolition of MIRAS reduced the progressivity of the income tax system with regard to the homeowner occupiers. This is alluded to in the original analysis in Chapter 6 (An evaluation of vertical equity) and is confirmed here through trend analysis. The progressivity of the income tax system as applicable to the tenant / landlords is reduced by the recognition of net rental income in the later years of the study as illustrated in Figure 8.16. This also is alluded to in Chapter 6 and confirmed through the modified simulation herein.

United States

All US case families experience a reduction in average income tax rates from 2002 through 2007. This is attributed to the significant increases to the standard deductions and modifications to the tax bands and tax rates within the US income tax system.

The trends of the average tax rates for all US case families are depicted in Figure 8.17.

Figure 8.17 The trends of the average tax rates for US income taxation for homeowners at each level of income during the entire period studied

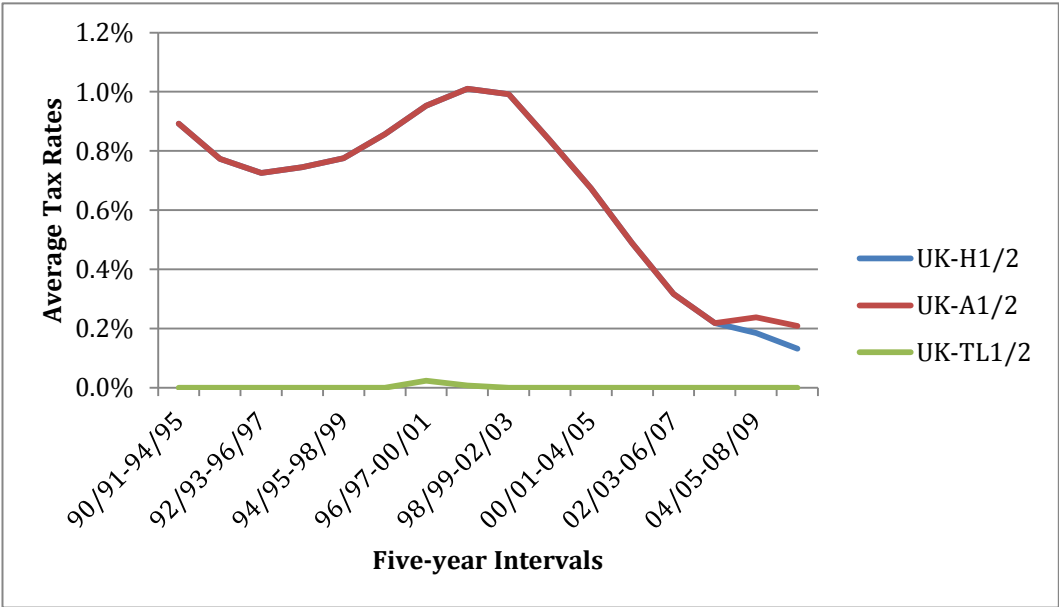


Appendix VI (Chapter 8 Figures), page 574.

Under the modified simulation, all US tenant / landlords experience net rental losses in all five years of each respective interval throughout the study period. This is the result of the increased levels of deductions for mortgage interest expense and depreciation as a result of the appreciated levels of indebtedness and acquisition valuations. Whether the respective case families are able to offset ordinary income with such passive losses depends on the levels of modified adjusted gross income.

The line graphs depicting the average income tax rates for all three investors at the various levels of income are reflected in the following five Figures (8.18-8.22)³⁷⁰. The graphs clearly reflect the ability of the tenant / landlords at the lower tiers of income and investment (US-TL½ and US-TL 1) to utilise their rental losses against ordinary income while the respective homeowner occupiers (US-H½ and US-H1) are unable to itemise deductions. The highest tiered tenant / landlords (US-TL4 and US-TL5) are restricted in loss recognition while the homeowner occupiers (US-H4 and US-H5) are able to significantly reduce taxable income with itemised deductions. The tenant / landlords at twice the median income level (US-TL2) recognise losses, but the respective homeowner occupier (US-H2) have lower taxable income as a result of their significant itemize deductions.

Figure 8.18 The trend of the average tax rates for US income taxation for the three investors at the lowest level of income during the period studied



Appendix VI (Chapter 8 Figures), page 575

³⁷⁰ These Figures are underpinned by the data reflected in Appendix VI (Chapter 8 Figures), pages 575 – 579.

Figure 8.19 : ATRs for US-1 families

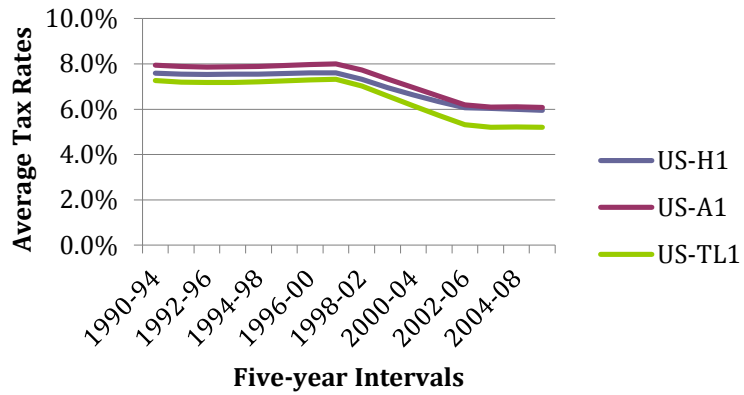


Figure 8.20 : ATRs for US-2 families

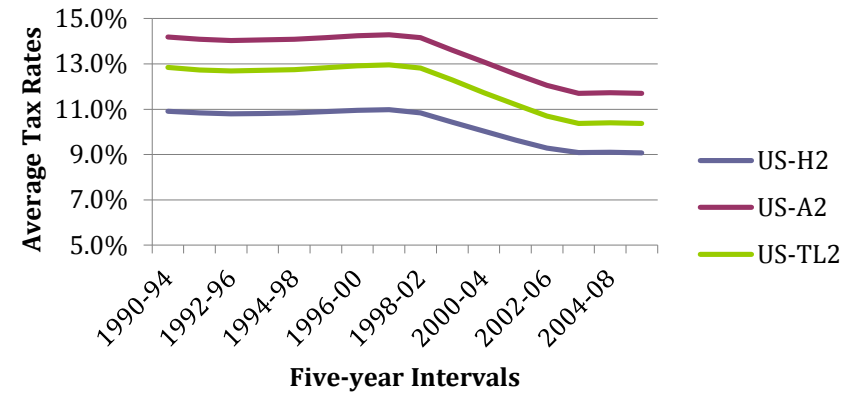


Figure 8.21 : ATRs for US-4 families

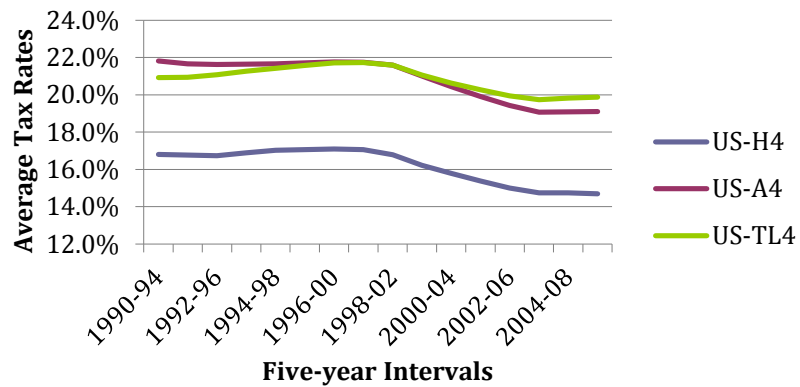


Figure 8.22 : ATRs for US-5 families

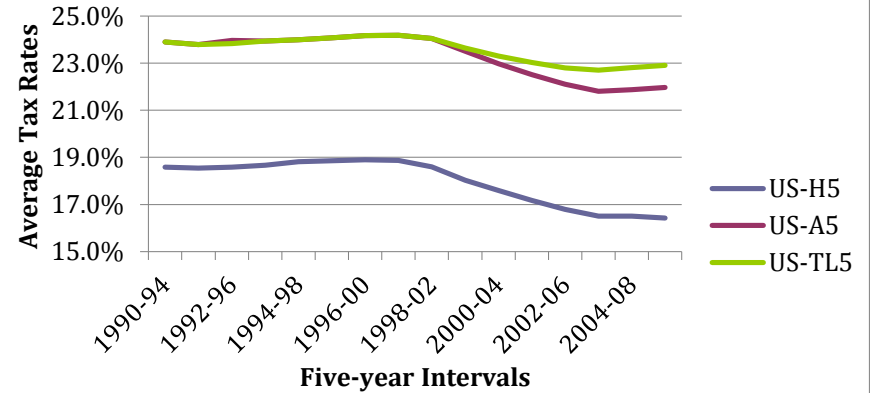


Figure 8.19 ATRs for US-1 families

Figure 8.20 ATRs for US-2 families

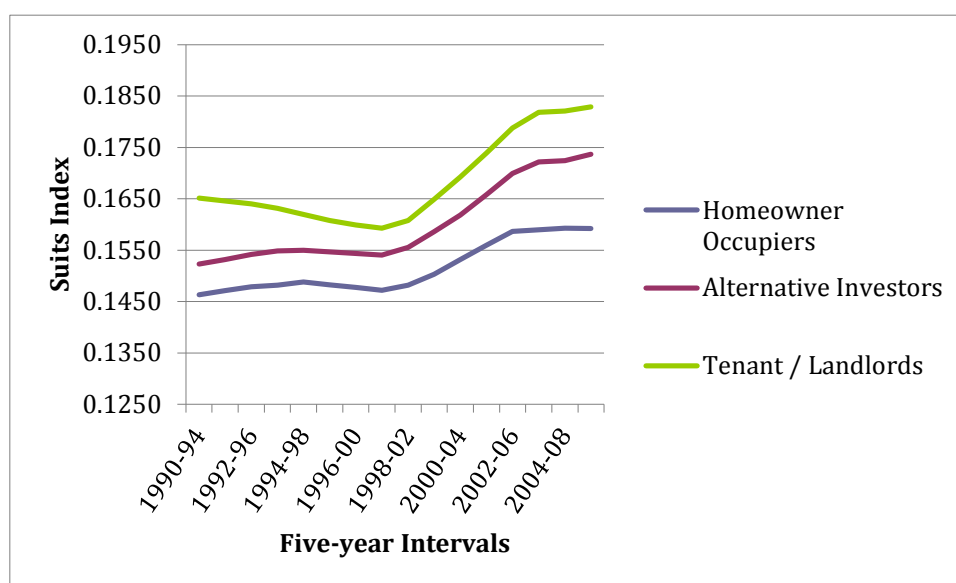
Figure 8.21 ATRs for US-4 families

Figure 8.22 ATRs for US-5 families

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The order of progression from least to greatest among the three US investors is homeowner occupiers, alternative investors and tenant / landlords based on the Suits indices calculated in five-year intervals. This is consistent with the findings in the Chapter 6 (An evaluation of vertical equity) when the calculations are based on annual data. The trends of the S indices for all three investors are depicted in the line graph within Figure 8.23.

Figure 8.23 The trend of the Suits indices for US income taxation for all three investors



Appendix VI (Chapter 8 Figures), page 580.

A noticeable change in trends occurs from 2003 when progressivity increases significantly. This is due to a number of factors that occur at the same time. First of all, the standard deductions claimed by the alternative investors, tenant / landlords and lowest tiered homeowners increase by 21% on the previous year. Prior to this, case family US-H1 are able to itemize their deductions thus differentiating themselves from the alternative investors; but from 2003 onward, the standard deduction is used. Secondly, there is a realignment of tax bands and an introduction of additional, lower tax rates in 2002 and 2003. In 2002 the 10% band is introduced. In 2003, the 25%, 28% and 33% tax rates supersede the previous 27% and 30% tax rates. In addition to the introduction of additional tax bands, the ceiling on the 15% tax band is increased by \$10,100. The effect of these significant changes in the general tax structure of the US income tax system accounts for the notable increase

in the progressivity experienced by all three investors. The ARP indices calculated on the cumulative income and corresponding tax liabilities for the 5-year intervals confirm the order of progression among the investors (i.e. the homeowner occupiers are the least progressive and the tenant / landlords are the most progressive). The ARP indices indicate the greatest progression rests between the two lowest tiered investors (i.e. US-½ and US-1) and then progression diminishes going up the income scale for all three investors with the exception of the first five years for the tenant / landlords, where there is greater progression between the two highest-tiered investors (US-TL4 and US-TL5) when compared with the next highest investors (US-TL2 and US-TL4).

Conclusions, comparisons and contrasting results

In spite of systematic increases in income, the UK alternative investors and tenant / landlords and all US case families experience a reduction in the average income tax rate from the start of the study to the end. The UK homeowner occupiers experience an increase in average income tax rates as a result of the abolition of MIRAS.

On comparing the two countries income tax progressivity trends, it is interesting to note the general decline in progression within the UK income tax system versus the general improvement within the US system. Both income tax systems had structural changes in terms of allowances, rates and bands at some point in the 20-year period. In spite of this similarity, progressivity improves in the US and is hindered in the UK.

This is explained by the degrees to which the structural changes occurred in the respective income tax systems. The personal allowance within the UK income tax system increased moderately over the twenty-year period with the exception of a significant increase in 2007/08. There was a significant restriction in the lower tax band in 1999/00, and moderate adjustments until 2007/08 when it was finally abolished. The basic rate band had only moderate adjustments throughout the period of study. The fall in progressivity follows the restriction of the lower rate band and the slight increase is the result of the uplift in the personal allowance. There are more significant adjustments to the US standard allowance and tax rate structures, which had the effect of increasing progressivity throughout the period of study.

8.1.4. Capital gains taxes

The capital gains taxation simulated originally reflects the tax legislation applicable in the years 2009 and 2009/10 in the US and the UK, respectively. Significant changes to these two tax systems occurred during the twenty-year study, which are not reflected under the original simulations. The modification in simulations reflected in this section identifies these changes and highlights their impact on horizontal and vertical equity. As discussed in Section 8.1.1 (Acquisition Taxes) it is assumed that each investor purchases their investment at the beginning of one tax year and sells it at the end of the fourth tax year, thus establishing a five-year holding period in the modified simulations. The real estate investments purchased are equal to 3.125 times their annual income (appreciating by 3% annually). The alternative investments are equal to 0.625 times the annual income (appreciating by 3% each year), which matches the initial equity investments of the case families invested in real property. Further equity investments by the alternative investors are not assumed given the relatively short periods of investment. The capital gains taxes are then calculated for each of the sixteen possible years of disposition, based on the respective years' exemptions, allowances and rates.

Both countries had significant changes to their respective capital gains tax regimes during the period studied. In the UK the provision for inflation relief was changed from an indexation allowance to taper relief from April 1998 and then disallowed entirely from April 2008 with a lowering of the applicable tax rates. In the US there were significant changes in applicable tax rates in general. With regard to the disposition of the principal residence in particular, the deferral method and one-time exclusion provisions were superseded with a generous exemption available to all who meet the occupation criteria. These reforms significantly impact the capital gains taxation of the higher income earner and investors as will be established in the following section.

Horizontal Equity

Under the original simulation, the UK and US homeowners are not liable for capital gains taxation at any level of income and investment. While the UK specifically exempts gains on the sale of the primary residence from capital gains taxation, the

current legislation in the US allows the exclusion of any qualified gain up to \$250,000 (\$500,000, married filing jointly). The threshold is set sufficiently high to ensure most taxpayers are exempt from capital gains taxation.

The UK alternative investors, at every level of income and investment, are able to avoid capital gains taxation through careful tax planning. This is not possible within the US tax system. Therefore, a significant horizontal inequity exists between the US homeowner occupiers and the alternative investors whereas complete equity inadvertently exists between the same in the UK.

At the end of the original simulation, the recaptured depreciation allowances for the US tenant / landlords are taxed at the marginal income tax rates, but capped at 25% for the higher tiered case families. This is an additional aspect of the capital gains tax regime in the US, which effectively raises the CGT rate above the 15% cap (i.e. the effective CGT rates for the three higher tiered families is 19.2%). The UK tenant / landlords are charged 18% on the capital gains realised, net of the two annual exemptions totalling £20,200. The two higher tiered tenant / landlord (i.e. UK-TL4 and UK-TL5) in the original simulation have effective tax rates of 15.3% and 15.9%, respectively. Therefore, under the original simulation, the greatest horizontal inequity rests between the US tenant / landlords and homeowner occupiers at every level of income and investment when compared with the UK corresponding investors.

United Kingdom

As in the original simulation, the homeowner occupiers and alternative investors do not incur capital gains taxation throughout the period of study. The homeowner occupiers' gains from the sale of their principal residences are specifically exempt from capital gains taxation and the alternative investors are able to offset their gains with the available exemptions. Therefore, horizontal equity inadvertently exists between these equivalent taxpayers throughout the study period as reflected in Table 8.15 on page 434.

The lower income earners / investors in rental real estate (UK-TL½ and UK-TL1) are able to avoid capital gains taxation through spousal income splitting and the use of the annual exemptions. The situation is the same for case family UK-TL2 with

the exception of the last two years of the study when small tax liabilities are incurred. Case families UK-TL4 and UK-TL5 are exposed to capital gains taxation from 2002/03. The results with regard to equity frequencies are sixteen occurrences of inequity favouring the homeowners at the highest two tiers (UK-TL4 and UK-TL5) and two occurrences of the same at twice the median income and investment level (UK-TL2), for a total of eighteen occurrences of inequity favouring the homeowners. The remaining occurrences for these three tiers total thirty to which the aforementioned thirty-two occurrences of horizontal equity as noted at the two lower tiers (UK-TL½ and UK-TL1) are added, resulting in sixty-two occurrences of horizontal equity in total. This information is summarised in Table 8.15 on page 434.

To summarise, the homeowners and alternative investors do not incur capital gains taxes throughout the study period. The two tenant / landlords with the highest income and investment (UK-TL4 and UK-TL5) incur capital gains taxes from 2002/03. The next highest earner/investors (UK-TL2) incur capital gains taxes in the last two years of the study. Table 8.10 reflects the amounts of CGT incurred by these taxpayers in the respective tax years.

Table 8.10 A summary of the capital gains taxes incurred by the higher-tiered UK tenant / landlords at the end of each respective tax year

Year of Disposal	Levels of Income and Investment:		
	(UK-TL5) pp 635-638	(UK-TL4) pp 631-634	(UK-TL2) pp 627-630
1994/95	0	0	0
1995/96	0	0	0
1996/97	0	0	0
1997/98	0	0	0
1998/99	0	0	0
1999/00	0	0	0
2000/01	0	0	0
2001/02	0	0	0
2002/03	5,649	3,372	0
2003/04	5,941	3,569	0
2004/05	5,952	3,548	0
2005/06	6,081	3,607	0
2006/07	6,198	3,658	0
2007/08	6,100	3,523	0
2008/09	5,235	3,280	115
2009/10	5,856	3,882	80

Appendix VII (Summaries of Differences in Specific and Overall Taxes), various pages referenced.

The notional gains increased annually by 3% and the annual exemptions increased on average 4% during the period studied. The reason for the later recognition of taxable capital gains is attributed to the withdrawal of inflationary relief. Indexation allowances were available on assets purchased before April 1998. With respect to the 5-year holding period assumed in this section of the research, the last gain relieved with an indexation allowance is incurred during the 2001/02-tax year. For all subsequent tax years simulated, capital gains taxation is significant to the two higher tiers (UK-TL4 and UK-TL5) as clearly indicated in Table 8.10. Prior to that, the relief available on dispositions in the years up to 2001/02 accounts for the non-recognition of taxable capital gains at the higher levels of income and investment.

Taper relief was accentuated during the overlapping years with the indexation allowance as it was applied to the indexed gain. From 2002/03 until its abolition in April 2008, the relief simply increased annually by 3% as would be expected. The effect of the complete withdrawal of taper relief from April 2008 on the higher earners is more than offset by the reduced capital gains tax rate from the marginal income tax rates to 18% in the last two years of the study. This is evident from the drop in capital gains taxes incurred by the two higher tiered tenant / landlords (UK-TL4 and UK-TL5) as indicated in Table 8.10. In contrast, the fact that case family UK-TL2 incurs capital gains taxes in the last two years of the study is the direct result of taper relief withdrawal.

United States

The legislation relevant to the taxation of US homeowner occupiers' capital gains on their principal residences changed dramatically in 1997³⁷¹. While the legislation has been completely overhauled, the effect with regard to first-time homebuyers (as assumed in the simulation) is the same in that it was unusual for taxpayers not to timely reinvest all their proceeds into a new home. The gains would eventually be taxable, but usually later in the life cycle when families tended to downsize or move to a less expensive area in retirement and then the one-time exclusion would be utilised. If the homeowner occupants in the study met the occupation and reinvestment criteria, then they would not be currently assessed any capital gains

³⁷¹ The reader is referred to Chapter 3 (Country Summaries) for details of these changes.

taxes on the sale of the principal residences that are assumed to be sold in the tax years prior to 1997.

The alternative investors are assessed a capital gains tax based on a flat tax rate applied to their taxable capital gains. A summary of the simulated capital gains tax obligations of the alternative investors is provided in Table 8.11. The rates have declined over the years as is apparent from the reductions in capital gains tax assessments on assets of increasing value throughout the study period. The tax assessments are relatively low given five years of growth assumed in the modified simulation rather than the original twenty.

Table 8.11 A summary of the capital gains taxes incurred by the US alternative investors at the end of each respective tax year

Year of Disposal	Levels of Income and Investment:				
	(US-5) pp 659-662	(US-4) pp 655-658	(US-2) pp 651-654	(US-1) pp 647-650	(US-½) pp 643-646
1994	4,181	3,345	1,672	448	224
1995	4,306	3,445	1,723	461	231
1996	4,436	3,548	1,774	475	238
1997	2,649	2,119	1,059	265	163
1998	3,361	2,689	1,344	336	168
1999	3,462	2,770	1,385	346	173
2000	3,566	2,853	1,426	357	178
2001	2,755	2,204	1,102	294	147
2002	2,837	2,270	1,135	303	151
2003	2,922	2,338	1,169	195	97
2004	3,010	2,408	1,204	201	100
2005	3,100	2,480	1,240	207	103
2006	3,193	2,555	1,277	213	106
2007	3,289	2,631	1,316	219	110
2008	3,388	2,710	1,355	0	0
2009	3,490	2,792	1,396	0	0

Appendix VII (Summaries of Differences in Specific and Overall Taxes), various pages referenced.

However, it is well worth noting the potential of far greater horizontal inequities that existed under the prior legislation. If the homeowner occupiers were unable to meet the reinvestment or occupation criteria to ensure a deferral of capital gains taxation, homeowner occupiers at each level of income and investment studied would have incurred significant tax liabilities in 1994, 1995 and 1996. The differences between tax obligations for the first three years of the study are reflected in Table 8.12.

Table 8.12 Differences in capital gains taxation between US homeowners and alternative investors (recognition of early gains pre-IRC§ 121)

Year of Disposal:	Levels of Income and Investment:				
	(US-5)	(US-4)	(US-2)	(US-1)	(US-½)
1994	16,724	13,379	6,690	1,792	896
1995	17,225	13,780	6,890	1,846	923
1996	17,742	14,194	7,097	2,111	950

Source: Worksheet V (Overall Tax Absolute \$) Q1639-W1643.

In Table 8.12 the obligations of the alternative investors are subtracted from the obligations of the homeowner occupiers. Therefore, the amounts reflected are the additional taxes incurred by the homeowner occupiers.

The tenant / landlords bear the same tax rates on their capital gains applicable to their taxable income levels as the alternative investors (e.g. 15% in 2009). However, the capital gains realised on real property with substantial debt financing are far more significant in comparison with the gains realised on alternative investment, as established in Chapter 5 (An evaluation of horizontal equity). Further, unlike the alternative investors, the tenant / landlords are assessed an additional (ordinary) tax on their unrecaptured Section 1250 gains (depreciation). These rates have differed from the capital gains tax rates since 1997. They are not set as low as CGT rates but may fall below the marginal income tax rates as they are capped at 25%. The actual tax obligations of the tenant / landlords are reflected in Table 8.13. The gains are quite significant, in spite of the relatively short periods of investment, illustrating the impact of the combined obligations on capital gains and recaptured depreciation.

Table 8.13 A summary of the capital gains taxes incurred by the US tenant / landlords at the end of each respective tax year

Year of Disposal:	Levels of Income and Investment:				
	(US-5)	(US-4)	(US-2)	(US-1)	(US-½)
	pp 683-686	pp 679-682	pp 675-678	pp 671-674	pp 667-670
1994	39,994	31,995	15,997	5,040	2,075
1995	41,194	32,955	16,477	5,221	2,149
1996	42,429	33,943	16,972	5,406	2,236
1997	34,941	27,953	13,976	4,549	1,881
1998	35,989	28,791	14,396	4,706	1,956
1999	37,069	29,655	14,827	4,928	2,051
2000	38,181	30,545	15,272	5,133	2,113
2001	34,735	27,788	13,894	4,630	1,992
2002	35,777	28,622	14,311	4,104	1,617
2003	36,850	29,480	14,740	3,643	1,250
2004	37,956	30,365	15,182	3,748	1,311
2005	39,095	31,276	15,638	3,865	1,346
2006	40,267	32,214	16,107	3,981	1,385
2007	41,475	33,180	16,590	4,100	1,417
2008	42,720	34,176	17,088	3,098	908
2009³⁷²	44,001	35,201	18,470	3,147	898

Appendix VII (Summaries of Differences in Specific and Overall Taxes), various pages referenced.

Once again, assuming the homeowner occupiers were in fact taxed on their realised capital gains in the early years, before the legislative change, then the differences in tax obligations between homeowner occupiers to the tenant / landlords are reflected in Table 8.14. In this table the obligations of the tenant / landlords are subtracted from the obligations of the homeowner occupiers. Therefore, the negative numbers depicted in red reflect the additional tax incurred by the tenant / landlords.

Table 8.14 Differences in capital gains taxation between US homeowners and tenant / landlords (recognition of early gains pre-IRC§ 121)

5-year Intervals	Levels of Income and Investment:				
	(US-5)	(US-4)	(US-2)	(US-1)	(US-½)
1990-94	-19,089	-15,271	-7,636	-2,801	-955
1991-95	-19,662	-15,729	-7,865	-2,914	-996
1992-96	-20,252	-16,201	-8,101	-3,029	-1,048

Source: Worksheet V (Overall Tax Absolute \$) Q1639-W1643.

³⁷² The highest tiered tenant / landlords has a capital gain of \$116,318 and a Section 1250 gain of \$106,214, yielding tax obligations of 17,447 and \$26,554, respectively. The total gain of \$44,001 is reflected in the table.

It must be stressed that it would have been highly unusual for first-time homebuyers to recognise their full capital gain upon disposition. The postponement criteria were reasonable with respect to the allowed reinvestment periods (two year before and two years after the sale). In addition, the reinvestment time frame may have been suspended while the taxpayer lived abroad under certain circumstances. The total suspension and repurchase period could not exceed four years however. Tables 8.12 and 8.14 reflect the worst-case scenarios where the total gains realised by the homeowner occupiers are indeed taxable. The true impact of this policy change would best be reflected in a full life cycle simulation, which is beyond the scope of this research.

Table 8.15 Equity frequencies (capital gains taxes)

Capital gains taxes: comparison between countries and investors			
Country and Investors	Horizontal Equity	Horizontal Inequity (favouring the homeowner)	Horizontal Inequity (favouring the alternative investor)
UK-A	80	0	0
US-A	4	76	0
UK-T	62	18	0
US-T	0	80	0

Source: Worksheet VI (Horizontal Analysis) AE-G136.

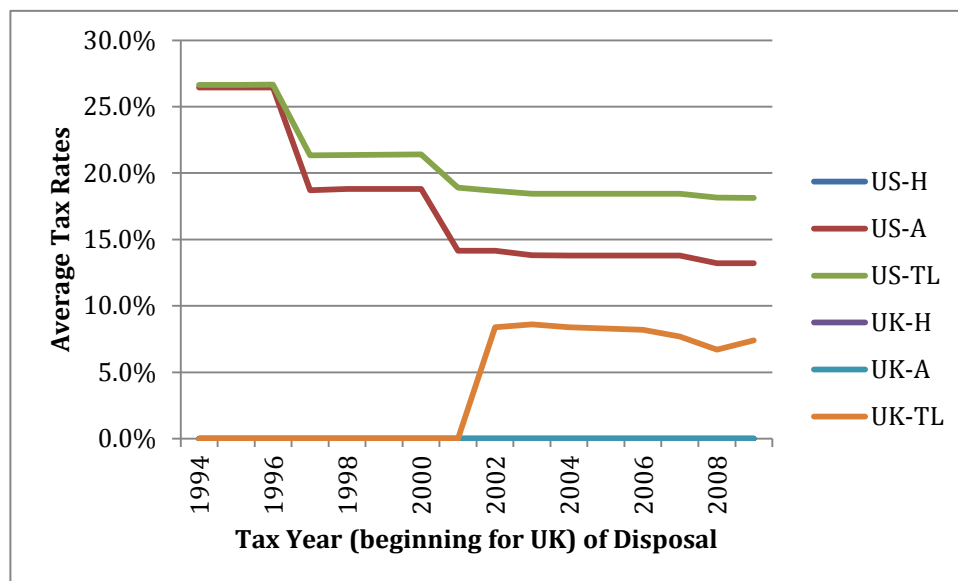
Conclusions, comparisons and contrasting results

The various changes to the UK capital gains tax legislation had the effect of broadening the respective tax base. By removing the allowances for indexation (i.e. the indexation allowance and the taper relief), taxpayers at lower levels of income and investment may, as a result, be subject to capital gains taxation. That said, the generous annual exemptions remain capable of sheltering the gains realised by alternative investors throughout the period of study as demonstrated in the original and modified simulations. However, the investors in rental real estate are subject to CGT at all but the lowest level of income and investment (UK-TL $\frac{1}{2}$) in the original simulation. Given the significantly lower levels of gains realised from the shorter periods of investment, only the higher tiered investors (UK-TL4 and UK-TL5) show significant liabilities in the modified simulation. UK-TL2 has minor liabilities in the last two years (i.e. 2008/09 and 2009/10). Regardless, it is evident from both simulations, the original and the modified, that the phasing-out and elimination of indexation relief resulted in a broadening of the tax base by exposing more capital gains to taxation.

Under the modified simulation, the UK tenant / landlords average capital gains tax rates calculated on the cumulative income and tax liabilities for all five investors went from zero in 1990/91 through 2001/02, to 8.4% in 2002/03 when the two highest tiered tenant / landlords are assessed CGT. This average rate fluctuated during the next eight years, ending with 6.7% in 2008/09 and 7.4% in 2009/10. The drop in the average tax rates is the result of the introduction of a flat capital gains tax rate applied to the nominal gains, net of the annual exemptions. This is depicted in Figure 8.24, where the UK tenant / landlords are represented by the orange line.

In spite of the aforementioned changes in relief and rates, the UK alternative investors are able to avoid capital gains taxation at every level of income studied. Therefore, the line representing UK alternative investors, as well as those for the homeowner occupiers in both countries, rests on the horizontal axis at a 0.0% average tax rate in Figure 8.24 below.

Figure 8.24 The trend of the average capital gains tax rates for all investors in both countries



Appendix VI (Chapter 8 Figures), page 581.

Far greater horizontal inequities are apparent in the US capital gains tax system throughout the period of study, particularly in the earlier years. This is reflected in Figure 8.24 where the average capital gains tax rate for US alternative investors (represented by the red line) and the tenant / landlords (represented by the green line) are both in excess of 26% in 1994 and then 13.2% and 18.1%, respectively, in 2009. The reason for the decline is attributed to the reductions in applicable tax rates. The reason for the variance between the two effective rates is attributed to the taxation of recaptured depreciation for the tenant / landlords in the year of disposal. While the average tax rates are analysed further under the next section on vertical equity, the horizontal inequities are apparent in the above line graph where the homeowner occupiers reflect zero average tax rates in both countries, the alternative investors in the UK also rest on the horizontal axis, the UK tenant / landlords are at the next level of taxation followed by the US alternative investors and then the US tenant / landlords.

Vertical equity

Chapter 6 (An evaluation of vertical equity) establishes the fact that the US capital gains tax system is more progressive than the UK system with regard to the

alternative investors. With regard to the tenant / landlords, the ARP indices indicate greater progression within the US tax system whereas the Suits indices indicate greater progression within the UK tax systems. The different results are due to the differences in measures. Whereas the ARP is measuring the progressivity of a given tax system with regard to its structure (i.e. the slope of the curve), the Suits index is measuring the progressivity based on its distribution. While the US tax system registers progressivity in its rates (ranging from 0 to 28% in the early years and 0 to 15% or 20%, depending on the taxpayer, in the later years), the UK tax system registers greater progression in the later years as a result of excluding lower tiered taxpayers from the base.

United Kingdom

The capital gains tax rates were the same as the income tax rates for savings income throughout the study with the exception of the last two years when the 18% flat rate applied. The capital gains tax system has remained progressive with nil-rate bands established by the annual exemptions and at least two income tax bands during the first 18 years of the study. The introduction of a single rate of capital gains taxation in 2008/09 has not changed the general classification of the system from one of progressivity in that there is still a nil-rate band with regard to the annual exemption.

As established in the previous section on horizontal equity, the UK homeowner occupiers and alternative taxpayers do not incur capital gains taxation in the five-year rolling simulations and therefore are not featured in this section on vertical equity. The tenant / landlords' incurrence of capital gains taxation is of interest in fully establishing the differences between homeowner occupiers and other investors.

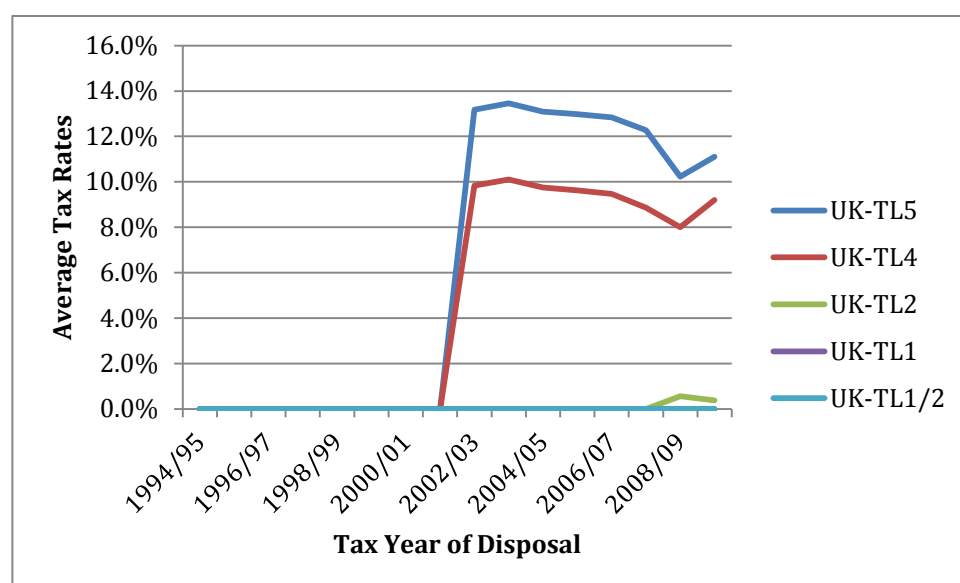
With regard to the study's tenant / landlords, no case family is subject to capital gains taxation until 2002/03 when the higher tiered investors are finally exposed upon the withdrawal of the indexation allowance. From 2002/03 through 2007/08 the two higher income earners / investors (UK-TL4 and UK-TL5) pay capital gains taxes at the marginal income tax rates. The flat capital gains rate of 18% introduced in 2008/09 and assessed on gains net of the annual exemptions then applies to the three highest tiered families (i.e. UK-TL2, UK-TL4 and UK-TL5) in the last two years of study. The average tax rates for all case families during the period of study

are summarised in Table 8.16. As clearly reflected in the table, the average tax rates of capital gains increase over the period of study, from 0% in the first year (i.e. 1994/95) at every level of income and investment to 11.1%, 9.2% and 0.4% for the respective highest tiered tenant / landlords (i.e. UK-TL5, UK-TL4 and UK-TL2). This information is also shown graphically in Figure 8.25.

Table 8.16 The average tax rates for UK capital gains taxation of the tenant / landlords at all levels of income and investment

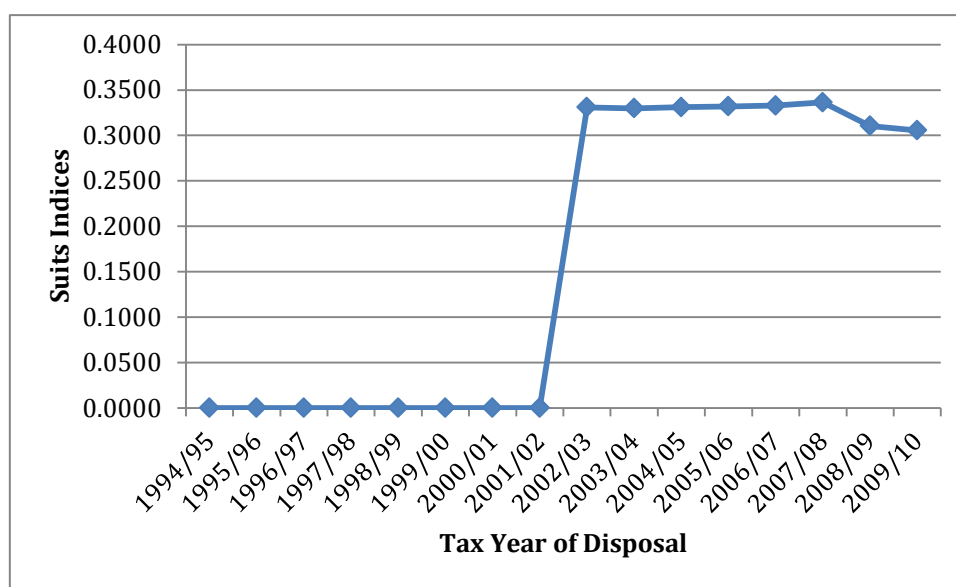
Year of Disposal:	Levels of Income and Investment:				
	UK-TL5	UK-TL4	UK-TL2	UK-TL1	UK-TL½
1994/95	0.0%	0.0%	0.0%	0.0%	0.0%
1995/96	0.0%	0.0%	0.0%	0.0%	0.0%
1996/97	0.0%	0.0%	0.0%	0.0%	0.0%
1997/98	0.0%	0.0%	0.0%	0.0%	0.0%
1998/99	0.0%	0.0%	0.0%	0.0%	0.0%
1999/00	0.0%	0.0%	0.0%	0.0%	0.0%
2000/01	0.0%	0.0%	0.0%	0.0%	0.0%
2001/02	0.0%	0.0%	0.0%	0.0%	0.0%
2002/03	13.2%	9.8%	0.0%	0.0%	0.0%
2003/04	13.5%	10.1%	0.0%	0.0%	0.0%
2004/05	13.1%	9.7%	0.0%	0.0%	0.0%
2005/06	13.0%	9.6%	0.0%	0.0%	0.0%
2006/07	12.8%	9.5%	0.0%	0.0%	0.0%
2007/08	12.3%	8.9%	0.0%	0.0%	0.0%
2008/09	10.2%	8.0%	0.6%	0.0%	0.0%
2009/10	11.1%	9.2%	0.4%	0.0%	0.0%

Figure 8.25 The trend of the average capital gains tax rates for UK tenant / landlords at all levels of income and investment



The Suits indices for the tenant / landlords are then calculated each year and the trend is shown graphically in Figure 8.26.

Figure 8.26 The trend of the Suits indices for UK capital gains taxation for the tenant / landlords



The flatness of the trend line before the drop in the last two years as depicted in Figure 8.26 is as expected as the applicable CGT marginal rates varied little between the two case families (UK-TL4 and UK-TL5). The last two years resulted in capital gains taxation for the case family with income/investments two times the median wage income (UK-TL2). This is the result of the taper relief withdrawal from April 2008, which until that time sheltered these taxpayers from CGT. With the resulting introduction of another case family to capital gains taxation the outcome was a drop in the Suits index, indicating a drop in progressivity. The reader is reminded that a tax system that imposes a tax on one individual with the greatest income yields an S index of 1 indicating high progression. When then cumulative tax burden is shared, the S indices will fall below 1 but stay above 0 if the system is progressive. Therefore, the drop in progression is as expected when the case family UK-TL2 bears some of the tax burden, however slight. However, this is only part of reason for the apparent drop in progressivity in the last two years. The other reason is

because of the change in capital gains tax rates from marginal rates to the flat 18% from April 2008. If the tax burden for UK-TL2 is removed from the computation, the results are higher S indices in the last two years, but still well below the S-indices of previous years under the previous CGT rates. In conclusion, the progressivity of the capital gains tax system has reduced since April 2008 as a result of: (1) another case family being brought into the tax base with the removal of inflationary allowances, and (2) the reform of the capital gains tax rates from marginal rates to a flat rate of 18%.

United States

Homeowners under the previous system of capital gains taxation were subject to the normal capital gains tax rates on any gains not otherwise deferred with a possible exemption of \$125,000 once they reached age 55. Therefore, the capital gains tax system with regard to homeowner occupiers before 6 May 1997 was a system of progressive taxation when gains were eventually recognised. In the modified simulation, when it is assumed the homeowner occupiers do not comply with the reinvestment criteria, the average tax rates for the lower tiered homeowners (US-H $\frac{1}{2}$ and US-H1) are 15% and for the upper tiers (US-H2, US-H4 and US-H5) are 28% for the three years relevant years (i.e. 1994, 1995 and 1996). The Suits index would be 0.0518 for all three years.

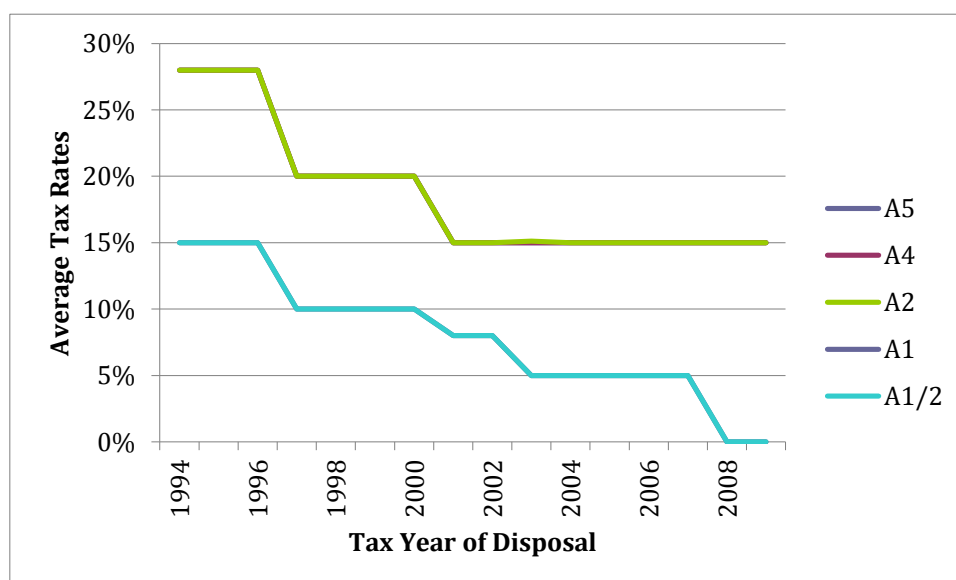
With regard to the alternative investors, the US capital gains tax system has remained a progressive tax system. The maximum CGT rate was 28% until 1997 when lower rates were introduced. For the remainder of the study at least two rates of CGT have applied. Those rates are applied to the full taxable gain and not to different slices of income, which makes the system a slab-tax system like the acquisition tax system in the UK. Regardless, the US capital gains tax system remains progressive by definition. The average tax rates for all alternatively invested case families during the period studied are summarised in Table 8.17. As clearly reflected in the table, the average tax rates of capital gains decline over the period of study, from 28% to 15% and 15% to 0% for the respective highest and lowest tiered alternative investors. This information is also shown graphically in Figure 8.27. The reader is advised that the lines coincide for US-A $\frac{1}{2}$ and US-A1 as well as US-A2, US-A4 and US-A5.

Table 8.17 The average tax rates for US capital gains taxation of alternative investors at all levels of income and investment

Year of Disposal:	Levels of Income and Investment:				
	US-A5	US-A4	US-A2	US-A1	US-A½
1994	28%	28%	28%	15%	15%
1995	28%	28%	28%	15%	15%
1996	28%	28%	28%	15%	15%
1997	20%	20%	20%	10%	10%
1998	20%	20%	20%	10%	10%
1999	20%	20%	20%	10%	10%
2000	20%	20%	20%	10%	10%
2001	15%	15%	15%	8%	8%
2002	15%	15%	15%	8%	8%
2003	15%	15%	15%	5%	5%
2004	15%	15%	15%	5%	5%
2005	15%	15%	15%	5%	5%
2006	15%	15%	15%	5%	5%
2007	15%	15%	15%	5%	5%
2008	15%	15%	15%	0%	0%
2009	15%	15%	15%	0%	0%

Source: Worksheet IX (Suits Index (AI)): AC20:AH36.

Figure 8.27 The trend of the average capital gains tax rates for US alternative investors at all levels of income and investment



Appendix VI (Chapter 8 Figures), page 584.

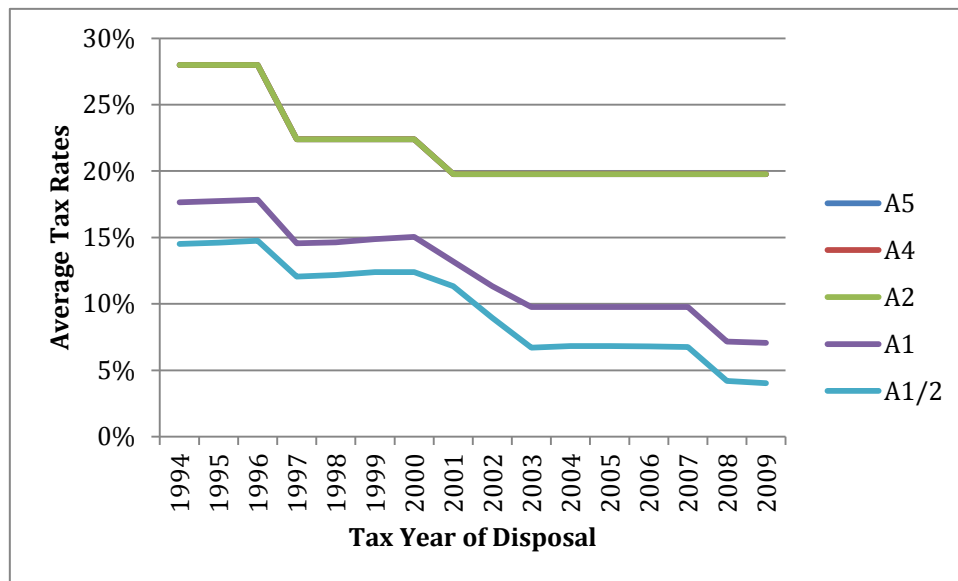
The tenant / landlords have the same capital tax rates apply to them as the alternative investors throughout the study. However, in addition to tax on capital gains they are assessed a progressive income tax on IRC§ 1250 gains based on their depreciation claimed over the life of the rental property. This tax was capped at 25% from 1997 onwards. The average tax rates applicable to the tenant / landlords are summarised in Table 8.18 and depicted in the line graph in Figure 8.28. Once again, the lines representing the three highest tiered tenant / landlords (US-TL2, US-TL4 and US-TL5) coincide graphically and are represented by the green line for US-TL2. The variations between these rates and those applicable to the alternative investors are due to the taxation of the IRC§ 1250 gains.

Table 8.18 The average tax rates for US capital gains taxation of tenant / landlords

Year of Disposal:	Levels of Income and Investment:				
	US-TL5	US-TL4	US-TL2	US-TL1	US-TL½
1994	28%	28%	28%	18%	15%
1995	28%	28%	28%	18%	15%
1996	28%	28%	28%	18%	15%
1997	22%	22%	22%	15%	12%
1998	22%	22%	22%	15%	12%
1999	22%	22%	22%	15%	12%
2000	22%	22%	22%	15%	12%
2001	20%	20%	20%	13%	10%
2002	20%	20%	20%	11%	7%
2003	20%	20%	20%	10%	7%
2004	20%	20%	20%	10%	7%
2005	20%	20%	20%	10%	7%
2006	20%	20%	20%	10%	7%
2007	20%	20%	20%	10%	7%
2008	20%	20%	20%	7%	4%
2009	20%	20%	20%	7%	4%

Source: Worksheet IX (Suits Index (TL)): AC19:AH36.

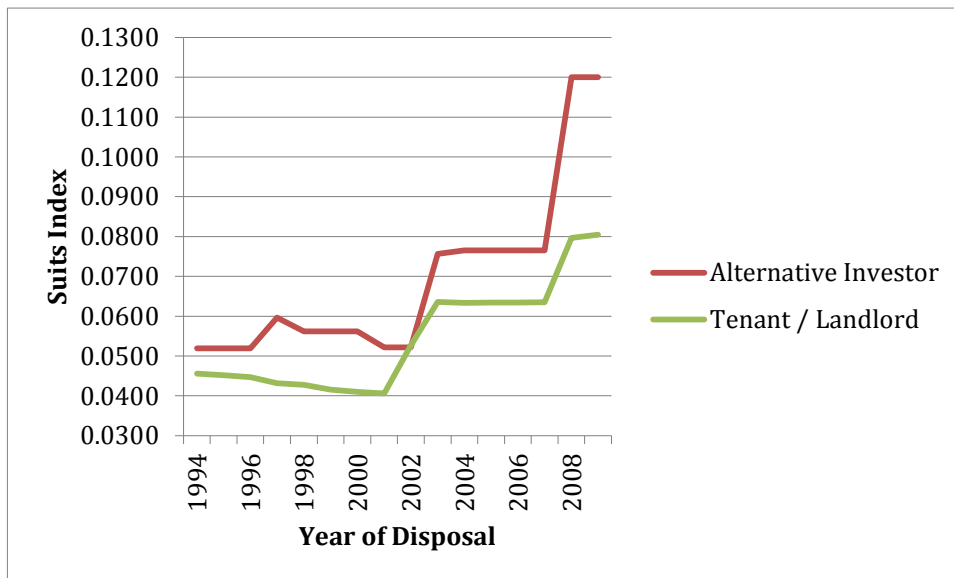
Figure 8.28 The trend of the average capital gains tax rates for US tenant / landlords at all levels of income and investment



Appendix VI (Chapter 8 Figures), page 585.

The Suits indices have measured degrees of progressivity given the fact that they are calculated on the cumulative income and tax data for all case families simulated. The trend of progression over the period studied is fairly flat until 2002 in which there is a significant improvement (increase in progression) in 2002 and 2003. The period 2003 through 2007 is again fairly flat and ends with another jump in 2008. These trends are reflected in Figure 8.29 on the next page. The reason for the jumps in progression in 2008 and 2009 is due to the introduction of the threshold at which point capital gains tax is assessed. This enabled the two lower-tiered alternative investors (US-A¹/₂ and US-A1) and tenant / landlords (US-TL¹/₂ and US-TL1) to avoid capital gains taxation entirely. When the cumulative tax burden is shifted up the income scale, as is the resulting situation here, progressivity is then improved.

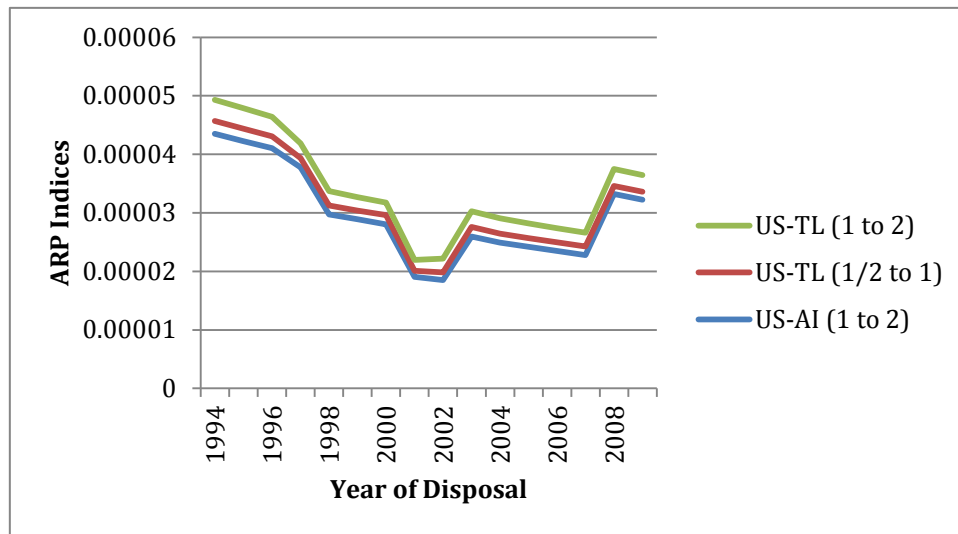
Figure 8.29 The trend of the Suits indices for US capital gains taxation for alternative investors and tenant / landlords



Appendix VI (Chapter 8 Figures), page 586.

On analysing the ARP indices, it is evident that the progression rests with the lower-tiered alternative investors and tenant / landlords. Specifically, the progression measures are significant between the income levels of 1-times and 2-times the median wage. Progression is also evident between the two lowest tiers of the tenant / landlords (US-TL $\frac{1}{2}$ and US-TL1) due to the regular taxation of the recaptured depreciation classified as capital gains taxation. The ARP indices are either nil or too small to note progression thereafter given the flat tax rates for capital gains taxes and the cap on the taxation of the recaptured depreciation realised at the higher levels of income and investment. The trends of ARP indices for the affected case families are reflected in Figure 8.30 on the next page.

Figure 8.30 The trend of the ARP indices for US capital gains taxation for alternative investors and tenant / landlords



Appendix VI (Chapter 8 Figures), page 587.

Conclusions, comparisons and contrasting results

The US capital gains tax system is more progressive than the UK capital gains tax system with regard to the homeowner occupiers. While the US simulation does not produce taxable income for the respective homeowner occupiers, the system is nevertheless progressive given the taxability after the exemption threshold. Under the previous US legislation, the system is also deemed progressive with the potential S index measure of 0.0518, assuming the full taxation of gains realised. As the UK capital gains tax system specifically excludes primary residences from taxation and has done so since the introduction of the tax, one must conclude that the US capital gains tax system is more progressive for homeowner occupiers.

The US capital gains tax system is more progressive than the UK capital gains tax system with regard to the alternative investors, given the results of the both the original and the modified simulations. It is shown that the UK alternative investors are capable of avoiding capital gains taxation through careful planning. This being the case, the progressivity measures yield nil rates of progression for the UK case families. The US alternative investors experience a more progressive system of taxation over the twenty-year period of study, with Suits indices ranging from 0.0519 in 1994 to 0.1200 in 2009.

The UK tenant / landlords do not realise capital gains taxation in the early years (i.e. 1994/95 through 2001/02) and therefore have Suits indices of nil for those eight years. Once the higher tiers are taxable, the relevant S indices measure progressivity of approximately 0.33 (with a small dip in the last two years as explained earlier). The US tenant / landlords experience a progressive tax system throughout the period of study, with S indices ranging from 0.0406 to 0.0804. In conclusion, the US capital gains tax system is more progressive in the early years of study, and then is surpassed by the UK system, once the UK tenant / landlords are exposed to taxation.

8.1.5. Overall taxes

The reader is reminded that the overall tax obligations are the sum of the specific tax obligations for each taxpayer in each year studied. As established in earlier sections to this chapter, changes in the transaction taxes during the twenty-year period of study can not be observed under the original simulation. A modified simulation whereby a five-year rolling methodology is employed with an aim to evaluate the effect reforms and modifications to the specific taxes have had on horizontal and vertical equity during the twenty-year period of study. Although the legislative changes to the recurring taxes are observable under the original simulation and discussed in earlier chapters, in order to accurately analyse the overall tax impact, such taxes are recalculated under the five-year interval assumptions. The information obtained and analysed in the earlier sections on the specific taxes informs this section of analysis.

Horizontal Equity

Chapter 5 (An evaluation of horizontal equity) establishes the horizontal inequities of the overall tax obligations between the two countries studied under the original simulation assumptions. Comparisons are made between the two countries, identifying the greater inequities between the respective homeowner occupiers and the other investors (i.e. the alternative investors and the tenant / landlords) with the use of a common currency. It is evident that the variations are greater favouring the UK homeowner occupiers over the two lower tiered alternative investors and the lowest tiered tenant / landlords. All other higher tiers yield results of significant

favouritism for the US homeowner occupiers.³⁷³ This is largely attributed to the fact that the wealthy US homeowner occupiers benefit almost exclusively and quite significantly from mortgage interest relief.

The average tax rates as determined by the cumulative overall tax liabilities and the cumulative income and gains show significant variations between the respective investors. Taken as a whole, the UK alternative investors and tenant / landlords pay more in overall taxation when compared to the homeowner occupiers by 1.93% and 1.30%, respectively. The variations are even greater for the US investors where the alternative investors and the tenant / landlords pay 4.27% and 4.07% additional overall taxes over the US homeowner occupiers.³⁷⁴

United Kingdom

The differences in overall tax obligations between the homeowner occupiers and alternative investors are entirely attributed to the acquisition taxes and MIRAS benefits.

There are 170 occurrences of horizontal equity corresponding with the years in which there are no acquisitions and there are no MIRAS benefits. The first years of each interval (i.e. set of five years) tend to favour the alternative investors of higher incomes (UK-A2, UK-A4 and UK-A5) given the high acquisition taxes imposed on homeowners of equal circumstance. There are exceptions in the early years, when MIRAS benefits are significant; the inequities favour the lower tiered homeowner occupiers (UK-H½ and UK-H1) in spite of their higher acquisition taxation. The total number of occurrences of horizontal inequities favouring the alternative investors in these initial years is 45. The remaining 185 occurrences indicating favouritism towards the homeowner occupiers are attributed to the early years in which MIRAS benefits are present and the later years in which the lower tiered homeowner occupiers (UK-H½ and UK-H1) do not incur acquisition taxes whereas

³⁷³ The reader is referred to Tables 5.26 and 5.27 of Chapter 5 (An evaluation of horizontal equity) for the comparison of the overall tax differentials between homeowner occupiers and the other investors in absolute monetary terms using a common currency (UK£).

³⁷⁴ The reader is referred to Table 5.28 (An evaluation of horizontal equity) for the detail of these variations.

the alternative investors of equal circumstance do. The results in terms of frequencies are summarised in Table 8.23 on page 454.

With regard to the homeowners and alternative investors, the acquisition taxes are a constant variant in the overall tax burden, regardless of income level. MIRAS also affects the overall taxation for all periods including the years up to 1999/00. Thereafter, MIRAS is not a varying factor. No other taxes affect the overall tax burdens between the homeowners and alternative investors (i.e. property tax liabilities are identical and neither set of investors incur capital gains tax obligations). Table 8.19 reflects cumulative overall tax differences within each 5-year interval within the time frame studied.

Table 8.19 Differences in overall tax obligations between UK homeowners and the alternative investors

5-year Intervals	Levels of Income and Investment:					
	UK-ALL	UK-5	UK-4	UK-2	UK-1	UK-½
	pp 615-618	pp 611-614	pp 607-610	pp 603-606	pp 599-602	pp 595-598
90/91-94/95	-13,952	-2,381	-2,764	-3,529	-3,218	-2,061
91/92-95/96	-7,717	-740	-1,134	-1,922	-2,316	-1,604
92/93-96/97	-10,421	-2,368	-2,323	-2,232	-2,187	-1,310
93/94-97/98	-3,831	280	-138	-974	-1,856	-1,144
94/95-98/99	-2,598	587	156	-705	-1,614	-1,023
95/96-99/00	-1,571	848	405	-482	-1,418	-924
96/97-00/01	55	1,237	781	-133	-1,097	-733
97/98-01/02	1,586	1,605	1,134	194	-800	-547
98/99-02/03	6,021	4,707	1,531	562	-461	-319
99/00-03/04	8,732	6,478	1,820	822	-231	-158
00/01-04/05	11,280	8,282	2,056	1,028	-57	-29
01/02-05/06	11,619	8,530	2,118	1,059	-59	-29
02/03-06/07	12,573	8,786	2,181	1,091	545	-30
03/04-07/08	12,951	9,050	2,247	1,123	562	-31
04/05-08/09	18,482	9,321	7,457	1,157	579	-32
05/06-09/10	18,374	9,601	7,681	1,192	-66	-33

Appendix VII (summaries of Differences in Specific and Overall Taxes), various pages referenced.

In conclusion, on analysing the horizontal differences between homeowners and the alternative investors in the later years (i.e. after MIRAS), there is relatively little difference at the lower levels of income and investment (UK-½ and UK-1). The variations between the two at the higher levels of income and investment are due to the significant amount of tax assessed on property purchases. Stamp duty land tax is the only variant from 2000/01 onwards. Thus, the current UK tax system does not

significantly favour homeownership when comparisons are made with alternative investors. To the contrary, the homeowner occupiers are more heavily taxed at the higher levels of income and investment.

The horizontal equity between the homeowners and tenant / landlords occurs when there are no MIRAS benefits and no taxable net rental income. These occurrences are limited to 7 years in five sets of five-year intervals for each case family. Therefore, there are 35 occurrences of horizontal equity between the homeowner occupiers and the tenant / landlords as reflected in Table 8.23 on page 454.

MIRAS is present in the first ten 5-year intervals (1990/91-1994/95 through 1999/2000 - 2003/04) for the UK homeowner occupiers. Income tax obligations from net rental income and capital gains tax obligations occur first in 2002/03 during the 1998/99 - 2002/03 interval and then from 2001/02 onwards in each respective interval for the UK tenant / landlords. Therefore, there is an overlapping of variations favouring homeowner occupiers in two intervals (1998/99 – 2002/03) with regard to the MIRAS benefits and the absence of net imputed rental income and capital gains taxation. Table 8.20 reflects cumulative overall tax differences for each 5-year interval within the time frame studied. The negative amounts depicted in red are reflective of the excess overall tax burdens of the tenant / landlords.

Table 8.20 Differences in overall tax obligations between UK homeowners and tenant / landlords

5-year Intervals	Levels of Income and Investment:					
	UK-ALL	UK-5	UK-4	UK-2	UK-1	UK-½
	pp 639-642	pp 635-638	pp 631-634	pp 627-630	pp 623-626	pp 619-622
90/91-94/95	-18,521	-4,294	-4,294	-4,294	-3,600	-2,040
91/92-95/96	-12,423	-2,710	-2,710	-2,710	-2,710	-1,582
92/93-96/97	-9,857	-2,142	-2,142	-2,142	-2,142	-1,288
93/94-97/98	-8,359	-1,810	-1,810	-1,810	-1,810	-1,121
94/95-98/99	-7,262	-1,566	-1,566	-1,566	-1,566	-999
95/96-99/00	-6,375	-1,369	-1,369	-1,369	-1,369	-899
96/97-00/01	-4,893	-1,046	-1,046	-1,046	-1,046	-708
97/98-01/02	-3,510	-747	-747	-747	-747	-521
98/99-02/03	-13,077	-6,959	-4,502	-768	-506	-342
99/00-03/04	-15,994	-8,506	-5,656	-1,131	-439	-261
00/01-04/05	-16,184	-8,778	-5,809	-1,131	-311	-155
01/02-05/06	-18,134	-9,652	-6,464	-1,428	-393	-196
02/03-06/07	-18,534	-9,868	-6,594	-1,468	-404	-202
03/04-07/08	-16,716	-9,099	-5,922	-1,200	-330	-165
04/05-08/09	-15,575	-8,180	-5,635	-1,293	-311	-156
05/06-09/10	-21,992	-11,156	-7,947	-2,113	-517	-259

In conclusion, on analysing the differences between homeowners and investors in rental real estate in the later years (i.e. post-MIRAS and for periods in which rental income and capital gains are recognised by the tenant / landlords), there are significant differences in favour of the homeowner occupiers at the higher levels of income and investment. The lower tiers are relatively indifferent given the levels of rental income and the non-taxation of capital gains due to the generous annual exemptions.

United States

With regard to the overall tax variations between homeowner occupiers and alternative investors, the following are relevant:

- Acquisition taxes paid by the homeowners and not the alternative investors are a constant difference between the two, regardless of income and investment levels.
- Property taxes are assumed to be incurred economically by the tenants of rental properties through capitalisation and therefore do not vary from the obligations of the homeowners with the exceptions of the first six years for the lowest tiered homeowner occupants who benefit from minor tax concessions.
- Income taxation varies when the homeowner occupiers are able to claim greater deductions by itemizing as compared with the standard deductions available to all.
- Capital gains taxation is an almost constant variant in that it is incurred by the alternative investors (except for the last two years with regard to the two lower tiered alternative investors (US-A½ and US-A1)) and not the homeowner occupiers.³⁷⁵

With these specific tax considerations in mind, the horizontal inequities of the overall tax obligations between homeowner occupiers and alternative investors are discussed with reference to the five levels of income and investment.

The lowest tiered homeowner occupiers do not itemize their deductions but are able to increase their standard deduction by their property tax payments in the last two years, 2008 and 2009. Property taxes vary initially because the homeowner

³⁷⁵ For the purposes of analysing the overall tax obligations, the homeowner occupiers were assumed to have satisfied the rollover requirements with regard to the sale of their principal residences in the years prior to 6 May 1997.

occupiers receive small tax concessions on their property taxes in the first six years of occupation. Acquisition taxes are paid by the homeowner occupiers in the years of purchase and capital gains taxes are paid by the alternative investors in the years of disposition with the exception of the last two years of study (2008 and 2009). Given these specific differences, there are 35 occurrences of horizontal equity, 29 occurrences of inequity favouring the homeowners and 16 occurrences of inequity favouring the alternative investor.

On comparing the overall tax obligations at the next level of income and investment (US-H1 and US-A1), there are no differences in property taxation and the homeowner occupiers itemize their deductions up until 2003 when the standard deduction increases dramatically. Again, acquisition taxes are paid in the years of purchase by the homeowner occupiers and the capital gains taxes are paid in all sale years except the last two, 2008 and 2009. Given these specific tax differences, there are 10 occurrences of horizontal equity between the homeowner occupiers and alternative investors at the median income and investment level. There are 54 occurrences of inequity favouring the homeowners and 16 occurrences of inequity favouring the alternative investors.

The rest of the case families can be easily summed up in that the homeowner occupiers all itemize their deductions and the benefit of this in the years of acquisition exceed the benefit realised by the alternative investors of not incurring acquisition taxes. The result being that the remaining 240 occurrences (80 possible occurrences per family, three families remaining) all favoured the homeowner occupiers.

The frequency totals of horizontal equity and inequities are summarised in Table 8.23 on page 454. The cumulative differences in tax obligations between the homeowner occupiers and the alternative investors are summarised in Table 8.21. The reader is cautioned that the gradual increase in overall tax obligation differences with regard to US-2, US-4 and US-5 is mainly due to the higher mortgage interest expenses recalculated in the simulations and claimed as an itemized deduction.

Table 8.21 Differences in overall taxes paid between US homeowners and the alternative investors

5-year Intervals	Levels of Income and Investment:					
	US-ALL pp 663-666	US-5 pp 659-662	US-4 pp 655-658	US-2 pp 651-654	US-1 pp 647-650	US-½ pp 643-646
1990-94	-90,173	-44,555	-33,380	-11,177	-549	-511
1991-95	-91,340	-45,328	-33,600	-11,423	-525	-464
1992-96	-94,562	-47,390	-34,567	-11,729	-526	-350
1993-97	-91,290	-46,319	-33,163	-11,328	-325	-154
1994-98	-93,838	-47,668	-33,762	-11,943	-410	-54
1995-99	-97,024	-49,411	-34,853	-12,346	-446	32
1996-00	-100,883	-51,484	-36,139	-12,849	-513	102
1997-01	-102,359	-52,489	-36,583	-12,932	-496	141
1998-02	-107,657	-55,366	-38,558	-13,330	-549	146
1999-03	-110,536	-57,520	-39,658	-13,198	-377	208
2000-04	-112,221	-58,787	-40,374	-13,018	-257	215
2001-05	-111,632	-60,065	-40,988	-12,738	-62	221
2002-06	-114,710	-61,611	-41,007	-12,471	152	228
2003-07	-116,241	-63,404	-41,244	-12,187	359	235
2004-08	-120,480	-66,100	-42,462	-12,636	428	291
2005-09	-127,321	-70,229	-44,749	-13,002	389	270

Appendix VII (Summaries of Differences in Specific and Overall Taxes), various pages referenced.

With regard to the overall tax variations between homeowner occupiers and tenant / landlords, the following are relevant:

- Acquisition taxes paid by the homeowners and the tenant / landlords are the same, regardless of income and investment levels.
- Property taxes do not vary with the exceptions of the first six years for the lowest tiered homeowner occupants who benefit from minor tax concessions.
- Income taxation varies when the homeowner occupiers are able to claim greater deductions by itemizing as compared with the standard deductions available to all. They also vary when the tenant / landlords are able to recognise all or part of their rental losses against general income or recognised net rental income.
- Capital gains taxation is a constant variant in that it is incurred by the tenant / landlords and not the homeowner occupiers.³⁷⁶

With these specific tax considerations in mind, the horizontal inequities of the overall tax obligations between homeowner occupiers and tenant / landlords are discussed with reference to the five levels of income and investment.

³⁷⁶ For the purposes of analysing the overall tax obligations, the homeowner occupiers were assumed to have satisfied the rollover requirements with regard to the sale of their principal residences in the years prior to 6 May 1997.

The rental losses recognised by the lower tiered tenant / landlords (US-TL½) reduce their taxable below that of the homeowner occupiers in all years except the last two, when both investors have nil taxable income. The tax benefit of this more than offsets the property tax concessions realised by the homeowner occupiers in the early years of the study with the exception of one year, 1992 (3 occurrences within the five-year intervals). The capital gains taxes incurred by the tenant / landlords however, consistently result in the favouritism towards the homeowner occupiers in the years of disposition. The final results therefore are 1 occurrence of horizontal equity, 19 occurrences of inequity favouring the homeowner occupiers and 60 occurrences of inequity favouring the tenant / landlords.

The income taxes incurred at the next level of income and investment (US-1) consistently favour the tenant / landlords, regardless of the years in which the homeowner occupiers are able to itemize their deductions. The capital gains taxes incurred by the tenant / landlords always exceed this benefit, and the 16 years of dispositions therefore favour the homeowner occupiers. The remaining 64 occurrences are inequities in favour of the tenant / landlords.

The remaining case families may once again be summed up together in that the overall tax obligations are consistently greater for the tenant / landlords in all years (240 occurrence) due to the significance of the itemized deductions realised by the homeowner occupiers and the fact that the tenant / landlords have significant capital gains tax obligations in the years of sale, outweighing any income tax benefit realised by suspended losses at the higher tiers.

The frequency totals for homeowner occupiers and tenant / landlords are summarised in Table 8.23. The cumulative differences in tax obligations between the homeowner occupiers and the tenant / landlords are summarised in Table 8.22.

Table 8.22 Differences in overall tax obligations between US homeowners and tenant/landlords

5-year Intervals	Levels of Income and Investment:					
	US-ALL	US-5	US-4	US-2	US-1	US-½
	pp 687-690	pp 683-686	pp 679-682	pp 675-678	Pp 671-674	pp 667-670
1990-94	-\$133,993	-\$62,113	-\$47,943	-\$18,554	-\$3,498	-\$1,886
1991-95	-136,987	-63,485	-48,860	-19,052	-3,600	-3,946
1992-96	-142,610	-67,187	-50,111	-19,602	-3,725	-1,984
1993-97	-128,173	-62,369	-44,797	-16,700	-2,826	-1,480
1994-98	-132,211	-64,131	-46,501	-17,224	-2,944	-1,411
1995-99	-137,189	-66,631	-48,310	-17,785	-3,137	-1,327
1996-00	-142,502	-69,329	-50,241	-18,384	-3,323	-1,226
1997-01	-136,439	-67,379	-48,112	-17,129	-2,789	-1,030
1998-02	-145,231	-72,599	-52,108	-17,652	-2,228	-643
1999-03	-153,716	-78,090	-55,604	-17,945	-1,668	-409
2000-04	-158,475	-81,122	-57,319	-17,898	-1,520	-616
2001-05	-165,205	-84,988	-60,018	-18,016	-1,367	-816
2002-06	-171,733	-89,350	-62,057	-17,963	-1,188	-1,026
2003-07	-178,852	-94,091	-64,363	-18,143	-1,024	-1,162
2004-08	-184,591	-98,151	-66,818	-18,844	-92	-686
2005-09	-194,574	-103,120	-70,307	-20,272	-140	-735

Appendix VII (Summaries of Differences in Specific and Overall Taxes), various pages referenced.

Table 8.23 Equity frequencies overall tax obligations for both countries

Overall taxes: comparison between countries and investors			
Country and Investors	Horizontal Equity	Horizontal Inequity (favouring the homeowner)	Horizontal Inequity (favouring the alternative investor)
UK-A	170	185	45
US-A	45	323	32
UK-T	35	365	0
US-T	1	275	124

Conclusions, comparisons and contrasting results

The following graphs depict the overall average tax rates of all three investors in both countries. The variations between the rates calculated for the homeowner occupiers and the other investors are not as pronounced in the UK in Figure 8.31 as compared with the US in Figure 8.32.

Figure 8.31 Trends of average UK overall tax burdens to comprehensive income for all three investors

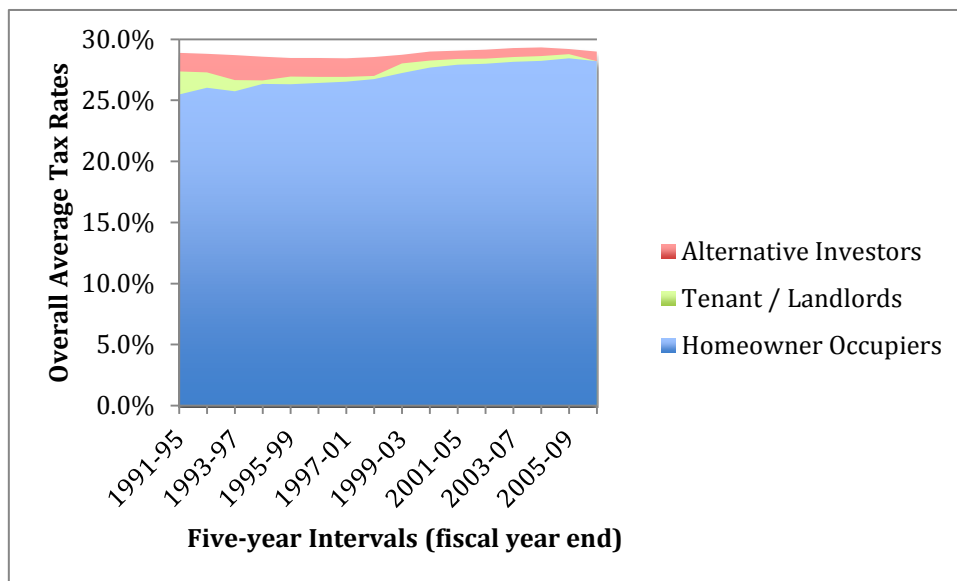
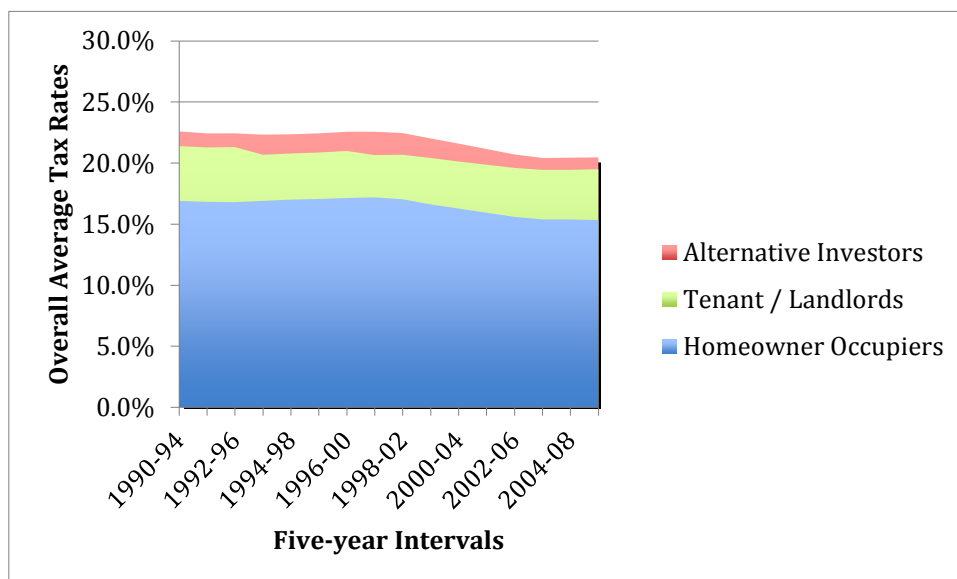


Figure 8.32 Trends of average US overall tax burdens to comprehensive income for all three investors



In the original simulation the overall average tax rate variations between the homeowner occupiers and the other two investors is fairly minor for the UK (i.e. 1.93% and 1.30% for the alternative investor and tenant / landlords, respectively³⁷⁷). This is based on the twenty-year cumulative tax obligations to cumulative income and gains for the respective case families (all five levels combined). In the modified simulation, the calculations are on five years cumulative tax obligations to cumulative income and gains. The overall average tax rates vary throughout the period of study with the greatest variations in the initial interval of study. For the five years 1990/91-1994/95, the overall average tax rate for homeowner occupiers exceeds the overall average tax rate for the alternative investors and tenant / landlords by 3.4% and 1.9%, respectively³⁷⁸. The variations diminish in the subsequent 15 intervals of five years, ending with a 0.8% variation between the homeowner occupiers and the alternative investors and no variation between the homeowner occupiers and tenant / landlords for the period 2005/06-2009/10. This is a particularly interesting point to highlight in that the assessment of capital gains taxation on the tenant / landlords is effectively offset by a reduction in the income tax assessment when the comprehensive income includes net rental income.

With regard to the original US simulation, the variation between homeowner occupiers and other two investors is more pronounced in comparison with the UK results, with 4.27% and 4.07% excess overall average tax rates experienced by the alternative investors and the tenant / landlords, respectively³⁷⁹. The modified simulation yield a more moderate fluctuation in rates over the time frame studied. As with the UK simulation, the initial five-year interval (i.e. 1990-1994) yields the greatest variation with 5.7% and 4.5% greater overall average tax rates for the alternative investors and the tenant / landlords as compared with the homeowner occupiers³⁸⁰. The variations between the alternative investors and the homeowner occupiers then diminish over the subsequent time periods until increases are noted in the final two intervals (i.e. 2004-08 and 2005-09). There is a reduction in the

³⁷⁷ The reader is referred to Table 5.34 of Chapter 5 (An evaluation of horizontal equity) for this detail.

³⁷⁸ The reader is referred to Appendix VI (Chapter 8 Figures), page 588.

³⁷⁹ The reader is referred to Table 5.34 of Chapter 5 (An evaluation of horizontal equity) for this detail.

³⁸⁰ The reader is referred to Appendix VI (Chapter 8 Figures), page 589.

variations between the homeowner occupiers and the tenant / landlords until 1998/09 - 2002/03, when the variations begin to increase.

Vertical equity

United Kingdom

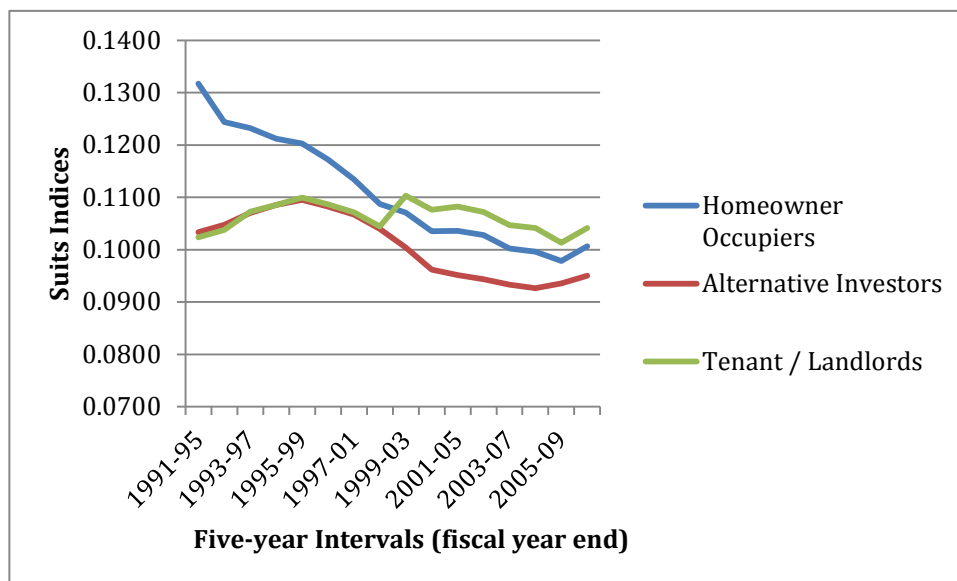
The progressivity of the overall tax system is influenced by the changes in the specific tax systems of which it is comprised. First of all, the reform of stamp duty land tax increases progressivity when the system's distributional effect is considered as a whole. This is evidenced by the variations in indices between the homeowner occupiers and the alternative investors in the later years, when acquisition taxes are their only differences. As depicted in Figure 8.33, the homeowner occupiers have the greater indices, indicative of a more progressive system of taxation. The closeness of the S indices between alternative investors and tenant / landlords in the early years when acquisition taxes are their only variations is further evidence of the effect on progressivity of the stamp duty land tax reform.

Property taxation is not a variant as all three investors bore the same liabilities based on the same incomes (property values).

The progressivity of income taxation, which greatly influences the overall progression measure given its heavy weighting, has generally declined during the period of study with the exception of moderate increases in the initial and final periods. The removal of MIRAS significantly reduces the progressivity of the homeowner occupiers, who until that time experienced a greater level of progression as compared with the other investors. It is established earlier that the rental income recognised by the tenant / landlords hinders progressivity as evidenced by lower S indices in comparison with the homeowner occupiers and the alternative investors.³⁸¹ Therefore, given the greater indices calculated on the overall tax obligations of the tenant / landlords as compared with the homeowner occupiers and alternative investors, the obvious improvement in progressivity is due to the only other variant, the capital gains tax system. These influences and trends in progression are clearly illustrated in Figure 8.33 on the next page.

³⁸¹ The reader is referred back to Figure 8.16 of this chapter.

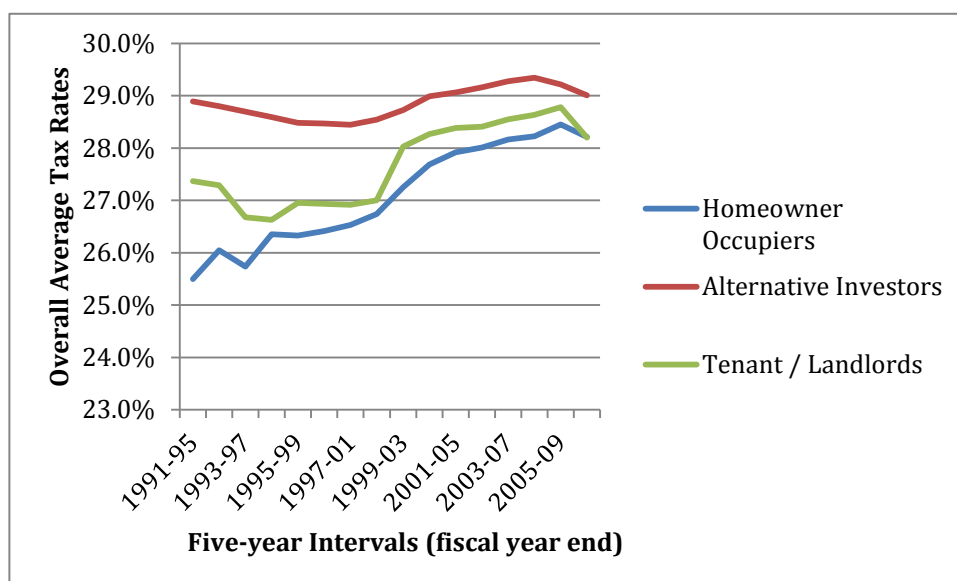
Figure 8.33 Trends of progression of the UK overall tax system for all three investors



Appendix VI (Chapter 8 Figures), pages 590.

The average tax rates calculated on the overall tax obligations and comprehensive incomes of the three investors for each of the five-year intervals are plotted in the line graph depicted in Figure 8.34.

Figure 8.34 Trends of average UK overall tax burdens to comprehensive income for all three investors



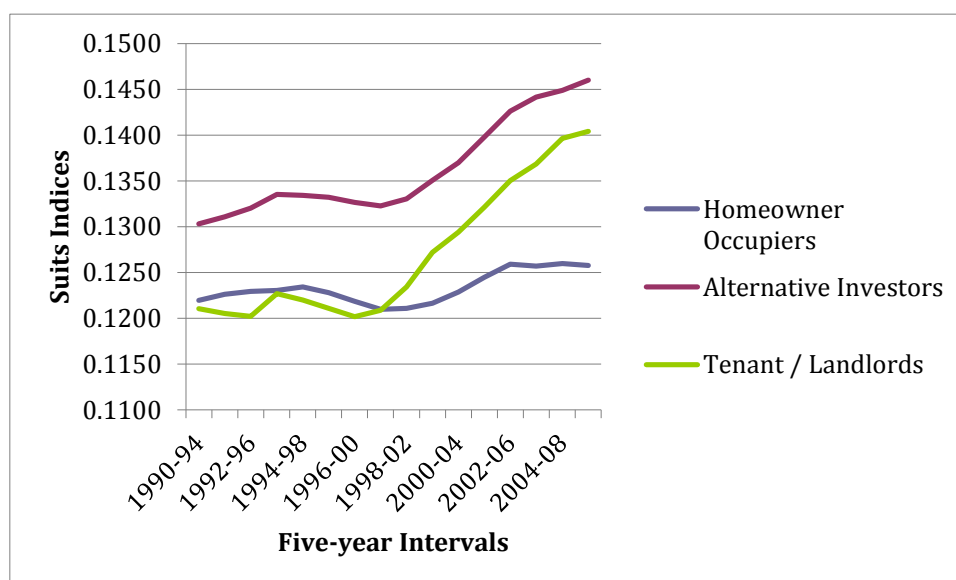
Appendix VI (Chapter 8 Figures), pages 591.

United States

On reflection of the orders of progression with regard to specific tax obligations, the alternative investors are more progressive in capital gains taxation than the tenant / landlords while the reverse is true with regard to income taxation. The weightings of these specific indices in determining the overall progressivity measures are that the indices for CGT are more heavily weighted with the tenant / landlords in comparison with the alternative investors' weighting and the indices for income taxation are more heavily weighted for the alternative investors in comparison with the tenant/ landlords' weighting. The effect of these two factors is that the overall Suits indices for the alternative investors exceed those calculated for the tenant / landlords.

The S indices calculated for the homeowner occupiers are fairly close to those of the tenant / landlords in the early years. For the period 1997-2001 the two investors have identical S indices (the point in which the lines cross in Figure 8.35). From that point onwards there is a distinct separation in progressivity for the remainder of the study.

Figure 8.35 Trends of progression of the US overall tax system for all three investors



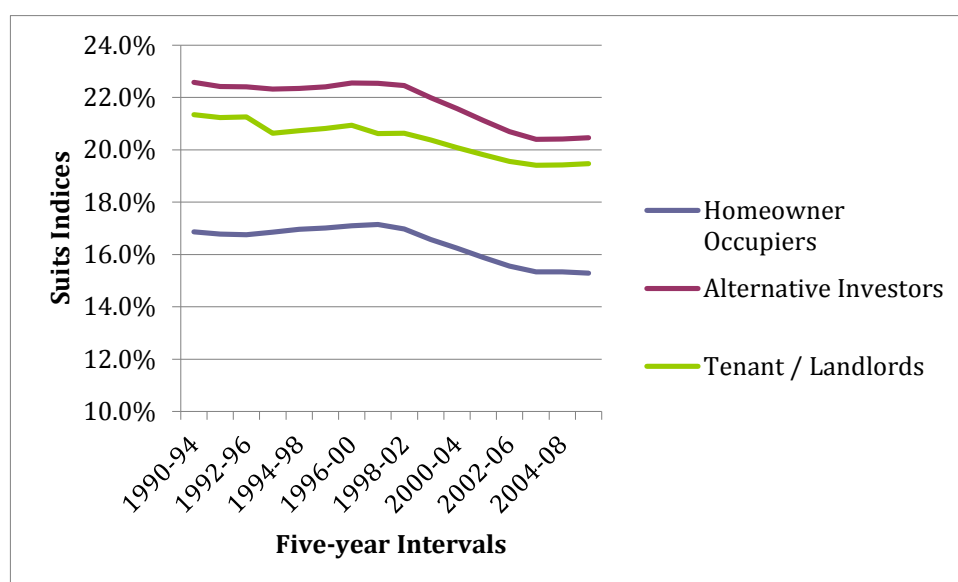
Appendix VI (Chapter 8 Figures), pages 592.

The general trend of progression of the overall tax obligations for all three investors is similar to what is seen when the focus is on income taxation; the early years are

fairly stagnant and the progressivity improves from around 2002 onwards. The improvements in progressivity are due to the changes in the income tax and capital gains tax rates and structures as well the significant increases in the standard deductions.

The declining trends of the average tax rates of overall tax obligations to comprehensive income are reflected in Figure 8.36. Quite clearly, the homeowner occupiers have the lowest average taxes of the three investors. The tenant / landlords have lower average taxes when compared with the alternative investors.

Figure 8.36 Trends of average US overall tax burdens to comprehensive income for all three investors



Appendix VI (Chapter 8 Figures), pages 593.

Conclusions, comparisons and contrasting results

Over the twenty-year period of study there is a general decline in the progressivity of the overall tax systems in the UK. During the same time frame, there is a general increase in progressivity of the overall tax systems in the US. This is as expected given the same directions of progressivity within the respective income tax systems. As income tax is heavily weighted in determining the Suits indices, it is logical that it has the greatest influence on the measure.

The homeowners experience the least progressivity in the overall tax system when compared with the two other investors in the US by a significant margin. Conversely, the UK homeowner occupiers experience a level of progression between the two other UK investors after the abolition of MIRAS. UK homeowner occupiers experience a more progressive overall tax system than the alternative investor and a less progressive system than the tenant / landlords.

On a cross-country basis, the UK system of overall taxation of the homeowner occupiers is less progressive than that of the US with a Suits index in the final year of 0.1007 as compared with 0.1256. While the UK's progressivity decreases significantly over the twenty-year period (the S index for the period ending 1994/95 is 0.1318), the US remains relatively flat (the S index for the five years ending 1994 is 0.1218)³⁸².

8.2. Trend analysis: conclusions

This chapter focuses on how the recent respective tax reforms regarding owner-occupied housing (all implemented within the time frame studied) affect tax equity. Specifically, the goal of this section of research is to ascertain whether the modifications and reforms improve or hinder horizontal and/or vertical equity.

The analyses have required revisions to the original micro-simulations to facilitate a complete and accurate appraisal of the specific tax reforms. In order to 'tease out' the effects of changes in the transactional taxes, 16 consecutive five-year rolling intervals are simulated within the twenty-year study period. The assumption is that the investors purchase their investments at the beginning of one tax year (e.g. 1991, 1992, 1993, etc.) and then dispose of them at the end of the fourth tax year following the purchase (e.g. 1994, 1995, 1996, etc.). The recurring taxes are analysed on a five-year cumulative basis (e.g. 1990-1994, 1991-1995, etc.). The revised simulations required changes to the homeowner occupiers and tenant / landlords original income tax calculations in order to reflect accurate mortgage interest expenses and, in the case of the US tenant / landlords, depreciation allowances for relief purposes. In other words, the income tax calculated for 1995 falling within the

³⁸² The reader is referred to Appendix VI (Chapter 8 Figures), pages 590 and 592, respectively.

1991-1995 block of five years would be different from the income tax calculation for 1995 as it related to the 1995-1999 block.

Each specific tax policy and the overall tax obligations are analysed with respect to the horizontal and vertical equity changes as a result of modifications and reforms. The methodologies measuring horizontal and vertical inequities as established in Chapter 5 (An evaluation of horizontal equity) and Chapter 6 (An evaluation of vertical equity) are consistently employed within. Trends are discussed in general terms as well as highlighting any anomalies. Comparisons with the other investors on a within-country basis are made as well as with the corresponding investors in the other country of study on a cross-country basis in accordance with the methodology established by Maylor and Blackmon (2005).

The fourth and final research question is addressed in three sub questions on which it is based. These questions are now answered by way of an overall conclusion on trend analysis.

8.2.1. Have the specific policy changes improved or hindered horizontal equity?

The UK acquisition tax system underwent significant reform during the twenty-year period, the effects of which are varied among the case families in this study. Firstly, the initial tax band moved its starter threshold from £30,000 to £60,000 in March 1993 and then to £120,000 in March 2005. This policy change has the effect of removing the respective case families of median income and investment (UK-H1 and UK-TL1) from the tax base. The lower tiered homeowners (UK-H½ and UK-H1) are able to avoid SDLT with the exception of 5 years when UK-H1 falls within the 1% tax band. This is therefore an improvement in horizontal equity between the homeowner occupiers and the alternative investors at these levels, given the otherwise significant differences in tax obligations between the two respective investors. Conversely, the higher tiered property investors' UK acquisition tax obligations increase significantly with the introduction of higher stamp duty land tax rates from 1997. While horizontal inequities are minimal at the lower levels, the gap significantly widens at the higher levels of income and investment (UK-H2, UK-H4 and UK-H5). The reform to the UK acquisition tax system therefore hinders

horizontal equity with the alternative investors at higher levels of income and investment. As the tenant / landlords incur the same acquisition tax obligation as the homeowner occupiers (i.e. SDLT is assessed on the property, regardless of use), there is no change in the horizontal equity between the two investors.

The UK property tax system changed from the Community Charge to the Council Tax in 1993. Horizontal equity is not an issue with either tax policy as they both target the occupier rather than the owner of the property. In other words, the homeowner occupier incurs the same property tax obligation as the tenant of a rental property. Therefore, while this reform improves equity from a vertical perspective as is discussed in the next section; it has no impact on horizontal equity.

The phasing out and ultimate abolition of the UK mortgage interest relief (MIRAS) improves the horizontal equity of the homeowner occupiers with the alternative investors and the tenant / landlords. MIRAS is a tax concession specific to homeownership, thus creating a tax wedge between such taxpayers and other investors. The phasing out of the concession reduces the inequities during the first ten years of the study and the final repeal in 1999/2000 removes the imbalance all together.

The benefits of the US mortgage interest and real estate tax deductions have eroded over the twenty-year period of study given the significant increases³⁸³ in the standard deductions. Horizontal equity improves at all levels of income and investment with fewer homeowner occupiers itemizing and those that do, are benefiting to a lesser degree as a result of the erosion. Regardless, horizontal inequities at the higher tiers continue to be significant.

The UK capital gains tax system has undergone several changes in the twenty years of study. Indexation allowance was given on investments purchased before April 1998. Taper relief was then allowed until April 2008 as the superseding inflationary allowance. This was abolished with the introduction of lower capital gains tax rates³⁸⁴. The removal of the indexation allowance brings more investors into the UK capital gains tax base. The two higher tiered tenant / landlords do not have taxable

³⁸³ The 21% increase in 2003 had a significant impact in particular.

³⁸⁴ Until that time, capital gains were taxed at the marginal rates applicable to savings income.

capital gains in the modified simulation during the period of time the indexation allowance is available. The taper relief alleviates some of the subsequent tax obligations, but the reduction in the marginal tax rates from 40% to 18% benefit higher-tiered taxpayers more. Therefore, with regard to the higher tiered tenant / landlords in this study, while more of their gains are subject to tax as a result of the removal of taper relief, the reduction in the CGT rate reduces their ultimate tax liabilities. That being the case, the reform in which taper relief was removed and the CGT rate was reduced to 18% improves the horizontal equity between tenant / landlords and homeowner occupiers. Since the 1990 introduction of independent taxation, savvy taxpayers with alternative investments are reasonably (and legally) able to avoid capital gains taxation through income splitting and the utilization of two sets of annual exemptions. As a result, there is complete horizontal equity between the alternative investors and the homeowner occupiers throughout the twenty-year period of study.

The US capital gains tax system as it relates to the homeowner occupier changed significantly with the Tax Reform Act of 1997. The postponement provisions as well as the once-in-a-lifetime exclusion previously allowed for homeowner occupiers were superseded with the general exclusions on all subsequent sales. The effect in the simulation is nil given the fact that all case families are able to fully exclude their realised capital gains on sales subsequent to 6 May 1997 and the sales prior to this date are reasonably assumed to be entirely postponed. The reform to the capital gains tax system as it applies to the homeowner occupiers, therefore, has no discernible effect on the horizontal equity of the homeowner occupiers with the other investors in this study. Changes to the rates and thresholds for the other investors, which are discussed in the following section, serve to reduce respective capital gains tax obligations of the other investors, thus improving horizontal equity between them and the homeowner occupiers.

8.2.2. Have the specific policy changes improved or hindered vertical equity?

The introduction of higher tax bands improves the vertical equity of the UK acquisition tax given the ability-to-pay premise on which it is based. The Suits

indices begin at 0.0040 in 1990/91 and conclude at 0.2193 in 2005/06³⁸⁵, clearly indicating an improvement in progressivity as a result of the reform.

The council tax is a far less regressive property tax system in comparison with its predecessor, the community charge. Therefore, the vertical equity of the UK property tax system improves in 1993 with the adoption of the council tax in that it is a less regressive form of taxation. This was clearly established in Chapter 6 (An evaluation of vertical equity), and simply reaffirmed with the modified simulation used for trend analysis. The Suits index in the first block of five years (i.e. 1990/91 – 1994/95) is -0.2798. Once the community charge is no longer relevant in the simulation (i.e. 1993/94 – 1997/98), the Suits index is a constant -0.1892³⁸⁶.

The income tax systems in both the UK and the US are progressive with multiple tax bands, allowances, deductions, and exemptions to consider. The focus of this research however, is on particular elements within the income tax systems that are related to housing (i.e. mortgage interest relief, real estate tax deductions in the US and rental property taxation). The UK allowed relief for mortgage interest through MIRAS until 1999/00. The progressivity of the income tax system with respect to the homeowner occupiers benefiting from MIRAS decreases during the period in which MIRAS is being phased out and falls in line with the alternative investors for the remainder of the study. As established in Chapter 6 (An evaluation of vertical equity), MIRAS is a regressively administer tax benefit which in turn improves the income tax progressivity. Its abolition results in lower progressivity for the homeowner occupiers³⁸⁷. In conclusion, while horizontal equity improves, vertical equity is inadvertently hindered with this reform.

There has been an erosion of the benefits of the US mortgage interest and real estate tax deductions over the twenty-year period of study due to the significant increases in the standard deductions. This coupled with significant changes in tax bands and income tax rates at around the same time affected the general progressivity of the

³⁸⁵ The reader is referred to Appendix VI (Chapter 8 Figures), page 563.

³⁸⁶ The reader is referred to Appendix VI (Chapter 8 Figures), page 564.

³⁸⁷ The reader is referred to Figure 8.16 of this chapter and Appendix VI (Chapter 8 Figures), page 573 for the detail of Suits indices recalculated under the modified simulation.

income system for the better³⁸⁸. However, the higher tiered US homeowner occupiers that benefit from itemizing their deductions continue to enjoy a less progressive income tax system as compared with the other US investors.

The progressivity of the capital gains tax system has been hindered with the introduction of a flat tax rate (prior to April 2008, there existed four rates of taxation). The system is still progressive in the sense that there is a nil rate band resulting from the annual exemption, but less progressive in comparison. With respect to the tenant / landlords in the study, there is an improvement in that the higher tiered case families go from no taxation to progressive taxation with the abolition of the indexation allowance. Further, a slight drop in progressivity is noted with the abolition of taper relief due to the fact that another case family is then exposed to CGT. In conclusion, the removal of inflationary relief exposing higher levels of gains to taxation improves the vertical equity of the system, while the introduction of a flat tax rate is a hindrance³⁸⁹.

The capital gains tax system as it applies to all other US investors is progressive in that there are at least two rates of tax. The tenant / landlords have an additional tax on their IRC§ 1250 gains (depreciation) which is initially taxed at the marginal income tax rates until 1997 when the rate is then capped at 25%. The effect of the change to the homeownership taxation is not discernible in this study as the postponement of the tax in the early years (prior to the reform) means no immediate taxation and the exemption allowance available in the later years of study means no taxation. The modification in capital tax rates for all other investors significantly improves the progressivity of the tax system³⁹⁰.

8.2.3. Have the recent reforms been more or less successful, on a comparative basis, in improving tax equity in the countries studied?

The US acquisition tax is assumed to be a constant proportional tax with no threshold for taxation. There are no modifications to report and therefore no changes

³⁸⁸ The reader is referred to Figure 8.23 of this chapter and Appendix VI (Chapter 8 Figures), page 580 for the detail of Suits indices recalculated under the modified simulation.

³⁸⁹ The reader is referred to Figure 8.26 of this chapter and Appendix VI (Chapter 8 Figures), page 583 for the detail of Suits indices recalculated under the modified simulation.

³⁹⁰ The reader is referred to Figure 8.29 of this chapter and Appendix VI (Chapter 8 Figures), page 586 for the detail of Suits indices recalculated under the modified simulation.

in horizontal or vertical equity to analyse. On comparison with the UK system of acquisition taxation, the US acquisition tax system is less equitable from a vertical perspective, but more equitable from a horizontal perspective given its constant proportionality.

The US property tax system varies throughout the US as it is administered at the local/municipal level of government. A state's policy that is in line with the national average is assumed within the simulations and its administration policies are adopted. In so doing, the lowest tiered homeowner occupiers receive a small tax concession in the first six years, thus introducing an element of progression into the system. Otherwise, as is common in most states' jurisdictions, the system of property taxation is proportional. A judgement on tax incidence is required in the simulations. If the first-round effects are of interest, the formal incidence of the property tax would suggest significant horizontal inequities between owners and mere occupiers (tenants) of properties. This would have a significant effect on the differentials of overall tax obligations for the two. However, as the user-cost framework underpins the simulation work with regard to rental income and expenses, the academic view of economical incidence is deemed more appropriate. That being the case, the property tax is assumed wholly capitalised into the rental obligations of the tenants and, as is the case in the UK, complete horizontal equity exists and has not altered during the study. The US proportional system of property taxation is more vertically equitable when compared with the UK's regressive council tax.

With respect to MIRAS within the UK income tax system, while vertical equity is hindered by the phasing out and final repeal of mortgage relief, horizontal equity is improved in that there are no differences in income tax obligations between the homeowner occupiers and the alternative investors. On comparing the US income tax system with the UK income tax system, the level of progression decreases over the twenty-year period of study in the UK whereas it improves in the US. The removal of MIRAS hinders vertical equity in the UK whereas the US income tax system becomes more progressive for homeowners with the erosion of the mortgage interest and real estate tax reliefs. This is logical as the US itemized deductions have

a progressive distribution (i.e. by benefitting the wealthy more), thus reducing progressivity.

The UK capital gains tax system, as is witnessed with the tenant / landlord case families, is far more progressive than the US capital gains tax system given the variations in their S indices of 0.3055 and 0.0804, respectively. The reason for this is that the UK maintains a nil rate band of taxation whereas the US effectively has one tax rate. There is a threshold of income US taxpayers must exceed before being subjected to capital gains taxation, but it does not serve as a nil rate band (i.e. once over the threshold, any chargeable gain is taxed at a flat rate).

With regard to the overall tax obligations of the UK homeowner occupiers and alternative investors, MIRAS is a significant variant in the early years, but it has a limited impact when the homeowner occupiers are assessed stamp duty at the higher levels of income and investment. In the later years (post-MIRAS), there is relatively little difference at the lower levels of income and investment (UK-½ and UK-1) while significant variations exist between the three investors at the higher tiers (UK-2, UK-4 and UK-5) due to the substantial amount of acquisition tax assessed on property purchases. In conclusion, horizontal equity improves at the lower tiers and is hindered at the higher tiers. Vertical equity decreases when the overall tax system is considered as a whole for both homeowner occupiers and alternative investors. It improves slightly for the tenant / landlords with the recognition of capital gains taxation from 2002/03 onwards. The average tax rates increase over time for the homeowner occupiers but, while there are some fluctuations, the average tax rates end fairly close to where they begin in the study with respect for the alternative investors and the tenant / landlords.

The US lower tiered homeowner occupiers have the overall tax advantage over alternative investors at the beginning of the study, but end up paying more in tax at the end of the study as reflected in Table 8.21. This is the result of the standard deduction becoming more difficult to surpass and fewer homeowner occupiers benefitting from itemizing their deductions while incurring significant acquisition taxes. The higher tiered homeowners continue to benefit from itemizing deductions throughout the period of study. However, the gradual increase in the tax advantages of the three higher tiered homeowner occupiers in the modified simulation as

reflected in Table 8.21, is largely to do with the recalculation of mortgage interest relief from increasing debt obligations in the 5-year rolling simulations. The other relevant tax obligations serve to reduce this effect as the acquisition taxes increase for the homeowners and the capital gains decrease for the alternative investors. The vertical equity measure on the overall tax system improves over the twenty-year period, particularly since 2003, the year from which there is significant improvement in the progressivity of the income tax system as a result of the tax structural changes previously discussed. The improvement however, is not as prominent with the homeowner occupiers as with the other investors. The homeowner occupiers experience the least progression followed by the tenant / landlords. The average tax rates calculated on the overall tax obligations to comprehensive income decrease slightly for all three investors³⁹¹.

8.2.4. Conclusion

This section of research focuses on the changes to horizontal and vertical equity as a result of policy reforms and/or structural changes to the specific tax systems. Analyses of the trends of the four specific taxes as well as the overall tax obligations are considered. The 20-year time frame of study is analysed in five-year rolling intervals to fully evaluate the significant changes to the transaction taxes in both countries.

Table 8.24 sets out a summary of the horizontal and vertical equity impacts from changes to the specific policies during the period of study with a final conclusion on the overall tax systems. The horizontal equity is considered with respect to the homeowner occupier case families as a whole (i.e. all five case families) in comparison with the alternative investors, as a whole. The vertical equity is considered solely from the perspective of the homeowner occupiers.

³⁹¹ The reader is referred to Figure 8.32 of this chapter and Appendix VI (Chapter 8 Figures), page 589 for the detail of average tax rates recalculated under the modified simulation.

Table 8.24 Summary of horizontal and vertical equity impacts from modifications and reforms of the various taxes for both countries

United Kingdom		United States		
Taxes	Horizontal Equity	Vertical Equity	Horizontal Equity	Vertical Equity
Acquisition taxes	Hindered	Improved	No change	No change
Property taxes	No change	Improved	No Change	No change
Income taxes	Improved	Hindered	Improved	Improved
Capital gains taxes	No change	No change	No change	No change ³⁹²
Overall taxes	Improved	Hindered	Improved	Improved

Quite often a trade-off is required with tax reform in that to improve vertical equity, horizontal equity may be hindered and vice versa. This is the case with the recent changes to the UK acquisition tax system as depicted in Table 8.24. By introducing higher tax bands into the system, progressivity is improved but the differences between the homeowner occupiers and the alternative investors are greater. Such a reform may be justified with respect to the ability-to-pay principle in that those investing in more valuable homes pay more. The resulting horizontal inequity may be justified in that an investment in partially mortgaged real property should achieve a much greater capital gain than the equivalent equity investment in alternative securities and that capital gain is specifically excluded from taxation.

³⁹² This is entirely dependent on the assumptions made within the case study with regard to the deferral of the gain in the early years and the level of gains realised in the simulation. As it is, nil capital gains tax liabilities were assumed throughout the case study, thus concluding no changes in vertical equity.

The study also revealed a trade-off between horizontal and vertical equity in the UK income tax system with respect to the phasing out and abolition of MIRAS. The limitation set on the qualified indebtedness and the applicable tax rates served to restrict the benefit at the upper end of the income spectrum, which in turn made the tax provision more valuable to the lower tiered homeowner occupiers in the study. This being the case, the homeowner occupiers experienced a more progressive income tax system during the period of study when MIRAS was still available. The abolition of MIRAS in 1999/2000, while obviously improving the horizontal equity with other investors, served to reduce the progressivity of the income tax system with respect to the homeowner occupiers. This is justified in that a restricted tax subsidy is still a tax subsidy and must be justified on grounds other than improved progressivity.

No such trade-offs are evident in the US study. The horizontal and vertical equity aspects of the US income tax system have both improved with the structural changes that were made during the period of study. The significant increases to the standard deduction, which had the effect of eroding the mortgage interest and real estate tax deductions of the homeowner occupiers, was one of the more significant structural changes and had a significant influence on horizontal and vertical equity with respect to homeowner occupiers and alternative investors. If the US provision for mortgage interest relief was more severely restricted with regard to qualified indebtedness, and/or if a further restriction on the applicable tax rates were introduced, horizontal and vertical equity would be further improved as evident from the UK study.

Given the significant influence the income tax systems have on the overall tax systems as defined in this research, the results on horizontal and vertical equity trends of the overall taxes mimic the results of the income taxes for both countries as depicted in Table 8.24. In conclusion, the trends of both countries are positive.

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Chapter 9: Conclusion

This final chapter comprises four sections. Section 9.1 summarises the approaches used to establish and evaluate the equity of owner-occupied housing taxation with reference to the most relevant literature. This is followed by a brief summary of the research methodology with specific references to areas of its originality. In Section 9.2, the author discusses the research findings on the inherent horizontal and vertical equities and inequities of the two countries' specific and overall tax systems and how they have changed during the twenty years studied. The author then reflects on the policy issues regarding the optimal taxation of owner-occupied housing as they relate to the UK and US tax systems in Section 9.3. In this section, the author reflects on the effects of increased levels of neutrality on the existing tax systems from horizontal and vertical equity perspectives. The conclusions and reflections are based on the research findings and references are made to the relevant chapters. The final section, 9.4, identifies the contributions to knowledge offered by this research.

9.1. A brief summary

For decades, tax efficiency, rather than tax equity, has been the predominant focus of policy makers and academics alike (Ventry, 2002). History has shown, however, that very efficient taxes may fail if perceived as unfair by taxpayers (e.g. the UK "Poll Tax"). It is for this reason that the primacy of equity over efficiency has been recognised by some academics including Rawls (1971), Green (1993), Anderson and Roy (2001), Ventry (2002), Thorndike (2002) and James and Nobes (2005). This research is a contribution to the smaller but very significant branch of literature concerning the equity of homeownership taxation.

Ideally, taxes should be equitable and neutral according to optimal tax theory. Neutral taxation is the basis of a horizontally equitable tax system. Vertical equity is also discussed in optimal tax literature.

The non-neutrality of certain tax policies may be justified when market failures are present and significant. The particular market failure most commonly acknowledged with homeownership is its associated externalities (Malpezzi, 2010). It has been the position of many politicians and academics for decades that homeownership conveys

certain positive externalities worthy of reward and encouragement. Pigou (2002/1952) suggested that tax systems might be instrumental in compensating such producers of social benefits. The mortgage interest and real estate tax deductions in the US continue to be defended vehemently on these grounds by certain lobbyists including, not surprisingly, the National Association of Realtors (NRA) and the National Association of Home Builders (NAHB).

There is, however, a growing awareness of the inefficiencies and inequities of these subsidies as well as of the existence of negative externalities associated with homeownership. Consideration was given to the misappropriation of capital investment and urban sprawl in earlier literature (Hancock and Munro, 1992, Muth, 1985, Voith, 1999, and Gervais, 2002). Later, Oswald (1997) and Green and Hendershott (2001) established a positive correlation between unemployment and homeownership. The recent financial crisis brought on by the US sub-prime mortgage market has led to a significant expansion in this branch of literature. Mortgage defaults and home foreclosures, which had grown to unprecedented levels by 2007 and 2008, significantly affect the value of neighbouring homes as recent research indicates (Pozen, 2011 and Campbell *et al*, 2009).

The argument for favourable tax policies for homeownership due to positive externalities is weak and in light of the current economic climate, may even be outdated. While there may be some recognisable social benefits from homeownership, there certainly exists a negative side that should no longer be ignored. Further, particular tax policies claiming positive externalities are not achieving their implicit (and often explicit) goal of encouraging homeownership. It is because of the inherent weaknesses in justifying favouritism in the tax treatment of homeowner-occupiers under Pigouvian tax theory that the author relies on the well-established theory of optimal taxation (i.e. neutral and equitable taxation) in this evaluation of the equity of owner-occupied housing taxation. The evaluation has been carried out from both the horizontal and vertical perspectives of tax equity.

The classical approach in defining horizontal equity calls for the equal taxation of equals (Smith, 1999/1776, Sidgwick, 1883, and Musgrave, 1959). This presents the researcher with a methodological problem: how does one define and thereby compare equals? The unit of measurement must be established (i.e. income,

expenditure, or wealth), as well as the taxable unit (i.e. individual or family) and the time frame (i.e. annual or lifetime). In any given sample, it would be next to impossible to identify taxpayers who were true equals except for the one variation selected for evaluation. This well-recognised obstacle gave rise to the alternative (re-ranking) approach in defining horizontal equity (Feldstein, 1976), which allows researchers to analyse the rankings of a sample before and after taxation. If re-ranking occurs, horizontal inequities are present in the tax system. This method of evaluating the horizontal inequities of housing taxation is present in the literature (White and White, 1965, Aaron, 1970, and Meng and Gillespie, 1986). The author is unaware of any research conducted on the horizontal equity of housing taxation with regard to its classical definition.

With the intention of clearly identifying and quantifying horizontal inequities in the UK and US tax systems resulting from homeownership taxation, micro-simulations using a representative agent technique are employed in this research. This methodological approach allows the researcher to evaluate horizontal equity under its classical definition. The researcher identifies and quantifies the absolute differences between a pair of case families, where everything is held constant except for the choice of investment and the resulting impact on tax liabilities. The analysis considers the two interpretations of inequity as established by Johnson and Mayer (1962): with and without regard to monetary differences. When the magnitude of the inequities are considered, the relationship with the value involved is recognised (i.e. a proportional, increasing or decreasing function), a method developed by Johnson and Mayer (1962). In addition, the variations in effective tax rates among paired taxpayers are noted to further establish any horizontal inequities, a technique inspired by Berliant and Strauss (1983).

Vertical equity calls for an appropriate differentiation of unequals. While the degree of differentiation is a matter of political and social debate, the underpinning principle of abilities to pay calls for a progressive overall tax system. When average tax rates rise with income, the tax system is progressive thereby taxing those with greater ability-to-pay more heavily. It has been widely accepted among the developed nations that a more equitable tax system demands progressivity (Musgrave and Thin,

1948, Berliant and Strauss, 1983, Musgrave, 2002, Rosen, 2005, Norrengaard, 1990, OECD, 1990, among others).

Measuring degrees of progressivity deepens the evaluation of the vertical equity of tax policies and tax systems. While techniques have varied over the decades, two approaches have emerged: the progressivity of a tax system may be analysed with regard to the tax structure or the income redistribution effect. This research on housing taxation is original in its consideration of both approaches.

The author is not aware of any earlier contribution to the housing taxation literature employing structural measurement in the evaluation of vertical equity. In this research, three of the four well-known structural indices are used to measure the degrees of progressivity at incremental levels and over the established range of study. The Average Rate Progression, Marginal Rate Progression and Liability Progression, which are varying mathematical expressions of the relationship between income and taxation, were established by Pigou (1928) and discussed by Musgrave and Thin (1948).

The micro-simulation technique employed within this study's methodology is conducive to structural analysis, rather than distributional analysis, given the absence of sample data. However, one technique in particular for measuring progressivity with respect to the tax effect on the redistribution of income as determined within the study's simulations emerged from the literature. Suits (1977) developed a measure of progression by modifying the traditional Lorenz curve and Gini coefficient. It is a comparison of the concentration of the tax liability with that of pre-tax income where the cumulative tax liabilities are plotted on the vertical axis and the cumulative pre-tax incomes are plotted on the horizontal axis, yielding a single concentration index as the measure. By considering this additional measure, the researcher is able to establish the progressivity of the respective countries' specific taxes from a distributional perspective, as well as to estimate the overall progressivity of the entire tax systems. This is possible because the Suits index is the one distributional index capable of yielding an overall estimation of the progressivity of an entire tax system through the weighted average of the indices determined for the specific taxes of which the system is comprised. This is particularly useful in the cross-country analyses of this study.

Further, by utilising the weighting technique developed by Suits, the researcher is estimating the progressivity of *a particular facet* of personal taxation (i.e. the favouritism towards homeowner occupiers). This is an original application of the Suits methodology.

The combination of horizontal and vertical equity measurement techniques employed within this study forms a synthesis of methodologies that has not previously been employed. The following section provides the reader with a discussion of the key research findings on the inherent tax equities and inequities of the two countries and the changes that have occurred during the twenty-year period of study.

9.2. Concluding remarks on horizontal and vertical equity

This research evaluates the tax equity of selected owner-occupied housing tax policies in the UK and the US during the last two decades. The evaluation considers the horizontal and vertical perspectives of tax equity, the effects of increased levels of neutrality, and the equity impact of the recent policy reforms and structural changes to the tax systems. A discussion on various policy issues underpinned by neutrality is provided in the next section. This section summarises the horizontal and vertical equities (or inequities) inherent in the UK and US tax systems and how they have changed over the twenty-year period of study. A detailed summary of the research findings is provided at the end of Chapters 5, 6, 7 and 8, to which the reader is referred.

The US specific tax policies relevant to homeownership and the overall tax system as defined within this study have greater inherent horizontal inequities when compared with the UK tax policies and tax system. The variations are mainly due to the US mortgage interest and real estate tax deductions available to homeowner occupiers, the country specific provisions for eligible rental activity deductions and allowable rental losses for the tenant / landlords, and the respective capital gains tax systems applicable to investors in residential rental real estate and other capital assets. During the period of study, the UK acquisition tax system became more significant in affecting horizontal equity between property investors and alternative investors.

Comparisons of the specific and overall average tax rates of each country derived from the research are provided in Table 5.34 (page 213). These are the rates as determined by the relationship of the sum of the specific tax obligations (cumulative for the twenty-year period) to the cumulative incomes and gains for each investor. As reflected in Table 5.34, there are more prominent variations in the average tax rates between the other US investors and homeowner occupiers as compared with the UK investors. In both countries, the homeowners are obliged to remit the least amount of tax as a percentage of their cumulative incomes and gains mainly due to the allowance of the mortgage interest relief in both countries' income tax systems. This relief in the UK was available until 1999/2000 when it was abolished and was restricted for the ten years it was relevant in the study. Such restrictions served to enhance the vertical equity of the UK income tax system and make the horizontal equity a decreasing function of the value of the tax discrimination involved. This is in direct contrast with the US mortgage interest relief where the qualified indebtedness limitation is not relevant, given the case families' established parameters (i.e. the relief is unrestricted). This research establishes, however, that lower tiered US homeowner occupiers are not significantly advantaged with regard to income taxation in comparison with the alternative investors and, in fact, are significantly disadvantaged in comparison with the tenant / landlords. This is due to the fact that the US standard deduction available to everyone has been raised to such a level as to be the default deduction for lower tiered homeowner occupiers. The tax advantage from the mortgage interest and real estate tax relief in the US income tax system has significantly eroded over the time studied, becoming apparent only at the higher levels of income and investment. Further, the value of the concession increases further up the income and investment scale as the relief is given at marginal income tax rates. This results in a decrease in the progressivity of the income tax system for the wealthier homeowner occupiers choosing to itemize deductions.

The non-taxation of imputed rental income and capital gains of both the UK and US homeowner occupiers creates significant horizontal inequities between such taxpayers and tenant / landlords at all levels of income and investment. However, the differences between the two countries' provisions for eligible rental activity deductions and allowable rental losses impact upon the horizontal inequities differently. The UK landlord may not claim a depreciation deduction against rental

income whereas the US landlord may. This significantly impacts the simulated early years' net losses and the subsequent years' net incomes. The UK tenant / landlords are unable to utilise the losses against general income whereas the US tenant / landlords, at the lower levels of income and investment may. It is for these reasons that the horizontal inequities, as established within the respective countries' studies, differ in terms of preference. The inequities favour the homeowners over the tenant / landlords in the UK simulation while the tenant / landlords are favoured over the homeowners in the US simulation.

The respective capital gains tax systems in each country significantly contribute to the horizontal inequities as well. Firstly, the ability of the UK alternative investors to escape capital gains taxation by taking advantage of the generous annual exemptions is contrasted with no such ability in the US tax system. While the horizontal inequities of the overall taxation favouring the higher tiered US homeowner occupiers over the respective alternative investors is increased as a result of capital gains taxation, there is no such impact within the UK tax system as the UK alternative investors are able to "plan away" their capital gains tax liabilities as established in this study and discussed in Section 5.1.4. Secondly, the US taxation of recaptured depreciation of the tenant / landlords widens the gap between the US homeowner occupiers and the tenant / landlords, while there is no such impact within the UK tax system.

This research establishes the fact that the horizontal inequities within the UK tax system have shifted from income taxation with the abolition of MIRAS to acquisition taxation (i.e. SDLT) with higher rates now applicable to the higher tiered property investors. The tax reform to the stamp duty land tax that occurred during the period of study has improved the vertical equity of the acquisition tax system in making it more progressive, but introduced a new significant horizontal inequity between UK property investors (i.e. homeowners and tenant / landlords) and alternative investors. It is not unusual to have such a trade-off between the two equity perspectives with tax reform.

Overall, the three US investors experience a more progressive tax system when compared directly with the UK investors. In fact, the US homeowner occupiers, while experiencing the least progression from the US tax system, are taxed more

progressively than the UK homeowner occupiers who experience the most progression in the UK tax system relative to the other investors studied. Two conclusions are then drawn. First, the US tax system is inherently more progressive than the UK tax system with specific reference to income taxation. This is due to country specific tax rates, tax bands, allowances and exemptions. Second, based on the order of progression deduced in this study, certain elements (i.e. mortgage interest relief and the non-taxation of imputed rental income), considered within the overall taxation relevant to homeowner occupiers, enhance³⁹³ the progressivity of the taxation of the UK investors and hinder the progressivity of the taxation of the US investors. This will be of particular interest to policy makers in the debate over reforming owner-occupied housing taxation as both countries favour progressive taxation.

9.3. Reflections and recommendations on policy issues identified through the micro-simulations

The methodologies consistently employed within this research in identifying and quantifying horizontal and vertical inequities have enabled the researcher to accurately decompose the existing tax subsidies in the UK and US tax systems. This enhances the understanding of each country's favouritism towards homeowner occupiers, thus establishing a platform from which to consider policy reform. Section 9.3.1 provides a discussion of the main policy issues regarding owner-occupied housing taxation as established in the literature and the focus of this research. Section 9.3.2 then considers how the simulations may be modified to further this particular area of research. Finally, section 9.3.3 briefly considers examples of non-housing tax policy issues conducive to micro-simulation modelling for future research.

9.3.1. The importance of analysing the whole of the housing tax regime

While markedly different in their approach and degree of favouritism, both UK and US tax systems continue to be criticised for their favourable tax treatment towards homeowner occupiers. The UK fully exempts net imputed rental income and capital

³⁹³ MIRAS enhanced the progressivity of the income tax system when it was available to UK homeowner occupiers.

gains from the respective income and capital gains tax bases. The US does not tax net imputed rental income, but allows mortgage interest and real estate tax relief to the higher tiered taxpayers (i.e. those able to benefit from itemizing their deductions). In addition, the great majority of US homeowner occupiers are exempt from capital gains taxation given the very generous exemption allowance now in legislation. In the wake of the financial crisis, when the UK and US governments are desperately trying to stabilise their respective economies and address their growing national debts, it may be time to reconsider some of these policies.

Optimal taxation calls for neutral taxation and consideration for horizontal and vertical equity. Accordingly, an extensive literature has emerged calling for the neutral taxation of owner-occupied housing. Such taxation would include the income of imputed rents (net of allowable costs) and the capital gains realised from the primary residence in the income and capital gains tax bases of a homeowner occupier. Theoretically, this would ensure the equal treatment of homeowner occupiers with investors of rental real estate, tenants of rental properties and investors in alternative capital investments.

When considering the optimal tax treatment of owner-occupied housing taxation in a particular country's tax system, it is important to consider the overall tax system as it relates to housing and its tenure and capital alternatives. This research evaluates the specific tax policies of homeowner occupiers with consideration of the alternative tax treatments of investors in rental real estate and other capital (i.e. securities). In addition to the specific tax analyses, their impact on the respective overall tax systems is also evaluated. The comprehensive analyses derived from this research provide a solid platform in which to consider further policy reform because it considers the overall tax system.

The capital gains taxation of the principal residence: conclusions and a proposal for change

If homeowner occupiers are subject to capital gains taxation in the UK, they would incur the same tax obligations as investors in identical rental properties, but this would introduce an inequity with alternative investors with the same capital investment. While the savvy alternative investors are able to avoid capital gains

taxation through basis uplifts, investors in real property are not. Instead, such investors are able to use one year's annual exemptions as an offset to the nominal capital gain realised on disposal. This often leaves a substantial taxable gain as evident in the micro-simulations of the UK tenant / landlords. The total capital gains of all three investors and the corresponding capital gains tax obligations of the tenant / landlords are summarised in Table 5.23 of Chapter 5 (An evaluation of horizontal equity) on page 200. This research establishes the effect of the current policy of exempting gains realised from the disposal of the principal residence from UK capital gains taxation and the alternative effect of removing that exemption in Section 7.1.3 of Chapter 7 (Equity effects from increased neutrality and a decomposition of subsidies). Under the existing policy, horizontal equity inadvertently exists between homeowner occupiers and the alternative investors, given the ability to 'plan away' CGT, while a significant inequity exists between the homeowner occupiers and the investors in rental real estate. If the exemption were removed through reform, significant inequities would then exist with the alternative investors while complete equity would exist with the landlords.

One solution to this potential inequity between homeowner occupiers and alternative investors, should the exemption be removed, would be to allow the unutilised annual exemptions to carry forward for future use against the capital gains realised from the disposal of primary residences. If this were permitted, however, neutrality would call for the same allowance for other investors in real property. In other words, my research shows that horizontal equity between investors in homes, alternative investments and rental properties may be improved and even achieved within the UK capital gains tax system by allowing the carry forward of unutilised exemptions. This is an untenable recommendation however, given the administrative difficulties and the significant loss in tax revenue. The entire capital gains tax system would become a blunt instrument and no longer worth administering. The rationale for not permitting the carry forward of unutilised annual exemptions undoubtedly lies with the administration and effectiveness of the UK capital gains tax system.

On a more practical note, the absence of capital gains taxation may be seen as compensating the homeowner occupier for the significant acquisition taxation³⁹⁴ of real property in the present UK tax system. However, it must be recognised that such compensation is an unintentional consequence of two separate policies rather than by design as the fact remains the tenant / landlord incurs both high acquisition taxation and capital gains taxation.

Given the significant acquisition taxation and the time value of money, capital gains tax liabilities may take a number of years to surpass the acquisition tax obligations in constant monetary terms. For example, a home purchased for £500,000, which appreciates annually by 3%, would not generate more in capital gains tax revenue than the constant value of the acquisition tax revenue levied on such a property until the eleventh year.³⁹⁵ This research shows that the homeowner occupiers' exemption from capital gains taxation in the UK tax system effectively compensates for their significantly higher acquisition taxation, which in turn improves the horizontal equity with alternative investors. Table 8.19 of Chapter 8 (Trend analysis) on page 448 summarises the differences³⁹⁶ in overall tax obligations between UK homeowner occupiers and alternative investors as simulated in five-year rolling periods during the 20-year time frame. In summary, this study establishes the fact that prior to the recent reforms to SDLT, higher overall tax obligations were borne by the alternative investors at the higher levels of income and investment. The subsequent rise in SDLT rates and its static thresholds have resulted in higher overall tax obligations now falling on the higher tiered homeowner-occupiers.

Transaction taxes present well-recognised hindrances to capital and labour mobility. Acquisition taxes and capital gains taxes are classic examples of transaction taxes that are potentially distortive in this respect. Given the already significant monetary impact of the UK stamp duty land tax on the investors in real property, introducing a

³⁹⁴ The original UK simulation does not highlight the impact of higher rates now present in the stamp duty land tax legislation. This is, however, discussed thoroughly and is evident in the modified simulations in Chapter 8 (Trend analysis).

³⁹⁵ This is under the current UK legislation relative to stamp duty land tax and capital gains taxation and assuming a 2% increase in the annual exemptions.

³⁹⁶ The earlier results (depicted in red font) are how much more overall tax the alternative investors pay in excess of the homeowner occupiers. The later results (depicted in black font) are reflective of the higher acquisition tax rates and depict how much more overall tax the homeowner occupiers pay, over and above the alternative investors.

capital gains tax on the future resale for homeowner occupiers could have very significant ‘locking-in’ implications. Of course, the capitalisation of both taxes may be argued. With regard to capital gains taxation, if the future incidence of the tax influences housing demand, the price of the home will be lowered. Similarly, the current SDLT may further reduce the price of the home.

If capital gains taxation on primary residences were introduced in the UK, the SDLT would almost certainly need reforming with a lowering of tax rates and/or raising of tax thresholds. My research clearly establishes the significant acquisition tax burden now experienced by homeowner occupiers at various levels of investment. The erosion of the investment thresholds with regard to SDLT is also discussed in Chapter 8 (Trend analysis). It would be a ‘hard sell’ to introduce capital gains taxation of the primary residence in addition to the relatively high acquisition taxation. Currently, the full proceeds from the sale of homes are available for equity reinvestment and the SDLT levy on the purchase of the next home. While capitalisation is well recognised at the academic level, the general public may perceive the additional taxation as a significant hindrance to reinvestment.

That said, from the public perspective and with consideration of Smith’s (1999/1776) fourth canon of taxation – convenience – the current timing of the UK transaction taxation with respect to the principal residence is illogical, particularly with respect to first-time homebuyers. To heavily tax the purchase of property, when the cash is going out as opposed to taxing the disposal of property, when the cash is in-hand, contradicts the concept of tax convenience. Capital gains taxation in lieu of the heavy acquisition taxation in the current UK tax system would be more sensible in terms of cash flow and may even stimulate the first-time homebuyers’ market. However, from the government’s perspective, the high acquisition tax in lieu of a capital gains tax under the current system would be considered more expedient given the timing of the tax receipts. At the end of the day, the public has accepted SDLT in spite of its obvious stealth-like characteristic³⁹⁷. Arguably, there may be greater public dissatisfaction from the introduction of capital gains taxation on the primary residence than any satisfaction generated from repeal or significant reform of the SDLT.

³⁹⁷ That characteristic is illustrated in Figure 8.4 on page 390, where the acquisition tax obligations of the five tiers of US property investors are simulated over sixteen years.

This research in general and this discussion in particular establish the underlying premise that the horizontal and vertical equity implications of particular tax policies must not be considered in isolation. Academics and policy-makers must also consider the overall tax system in which they are present. This is a well-established principle of policy design and reform, and this research provides strong evidence that the principle is well founded.

Prior to May 1997, the US had a capital gains tax system in which the recognition of the capital gain realised on the disposal of a principal residence was deferred if the proceeds were fully reinvested into another property within a given time period. Once taxpayers reached aged 55, a \$125,000 exemption was available to offset any otherwise taxable capital gain. The method of deferral was repealed in 1997 and the exemption was replaced. Under current legislation enacted by TRA1997, taxpayers are now able to exclude up to \$250,000 (\$500,000 for married taxpayers filing joint income tax returns) of capital gains realised on the sale of their principal residence if the two-year occupation criterion is satisfied. The current exemption may be claimed repeatedly, but not within two years of a previous claim.

This reform to the capital gains tax legislation with regard to the principal residence is believed to be a significant contributor to the current US housing crisis. The relaxation of the capital gains tax exemption applicable to principal residences increased the demand for housing at a time when other government policies (i.e. CRA77, lending quotas, the American Dream Down-Payment Act of 2002, etc.) also encouraged homeownership. In addition to this, the lax lending policies and ‘creative financing’ that evolved at this time, coupled with housing appreciation and low interest rates, further encouraged property speculation. The inevitable result was the creation of a bubble in the housing market.

While the reformed US capital gains tax system is without question a simpler system to administer, the previous system was arguably a fairer system in that the wealthy may have eventually recognised capital gains taxation on their unearned income when down-sizing. This is established in this research, which considers the potential capital gains tax liabilities of the US case families prior to the reform in Section 8.1.4 of Chapter 8 (Trend analysis). The simulation results yield significant capital gains tax liabilities accruing to the homeowner occupiers in the three relevant tax years

(i.e. 1994, 1995 and 1996). Table 8.12 on page 432, summarises the differences in capital gains taxation, in the years preceding the reform, between US homeowner occupiers and alternative investors assuming the gains realised by the homeowner occupiers were indeed recognised and taxed. The differences are how much more tax is borne by the homeowner occupiers over the alternative investors. The liabilities fall between those of the respective alternative investors and the investors in rental real estate. Therefore, under the previous system of capital gains taxation of the principal residence, assuming the reinvestment criteria were not satisfied, horizontal inequities favouring the alternative investors over the homeowner occupiers exist at each level of income and investment. Yet, given the ultimate taxation of recaptured depreciation by the rental property investors, the horizontal inequities continue to favour the homeowner occupiers. The vertical equity of the prior system of taxing capital gains realised on principal residences is also apparent through micro-simulation as reported in Section 8.1.4.

Capital gains taxation in any tax system introduces a level of fairness through horizontal and vertical equity. When capital gains taxation was introduced in 1965 in the UK, the debate in Parliament included the following quote:

Capital gains confer much the same kind of benefit on the recipient as taxed earnings more hardly won. Yet earnings pay full tax while capital gains go free. This is unfair to the wage and salary earner (Hansard, vol. 710, col. 245).

It is the opinion of the author that the reforms to the US capital gains tax system as it applies to investment in the principal residence were a significant breach of equity and ignored the basic principle of tax capitalisation.

The taxation of imputed rental income

Advocates for the taxation of imputed rental income include King and Atkinson (1980), Fender (1986), Muellbauer (1987), Ball (1990) and Callan (1992). Their argument is based on the economic case that owner-occupiers derive income, yet go untaxed, thus investment decisions are distorted. Imputed rental income has not been taxed in the UK since the abolition of Schedule A in 1963. Schedule A was reintroduced in 1969 but no longer included the taxation of imputed rental income.

Prior to its abolition, the neglect of the system that taxed imputed rental income was apparent as the income was based on pre-WWII valuations (Ball 1990, p 17). The approach was to estimate imputed rents based on comparable rents in the local private sector. To consider such an approach now, given the shift in the two sectors would be difficult and even impossible in some areas. There are other alternative methods of imputation, but not without their own obstacles. In fact, the reason for not reintroducing imputed rental income into the UK income tax system was noted to be its “grave administrative difficulty”(Welham 1982, p 152; with further reference to the Department of Environment’s Green Paper Cmnd 6851).

Such taxation has never been introduced into the US income tax system, yet deductions for mortgage interest and real estate taxes are permitted. If the optimal taxation of owner-occupied housing is to tax net imputed rental income, the second best alternative is to not allow deductions for costs that generate untaxed income. The Office for Management and Budget³⁹⁸ estimate the loss in tax revenue from the mortgage interest deduction to be \$79 billion in 2010. On a comparably smaller note, the real estate tax deduction is estimated to cost \$15 billion. If imputed rental income were taxed, the OMB estimated the revenue to be \$41 billion in 2010.

The research summarised in Chapter 7 (Equity effects from increased neutrality and a decomposition of subsidies) highlights key considerations if a policy for taxing imputed rental income were introduced into the existing US income tax legislation. These include the depreciation allowance and the loss recognition. In fact, eight alternative scenarios were possible in the second hypothetical scenario (V2) in Section 7.1.2. The five case families simulated a cumulative imputed net *loss*, given the parametrical assumptions and an identical tax treatment with respect to residential rental property investors. This section highlights the fact that the administrative and compliance difficulties would be even greater in the US tax system as compared with the UK tax system, given its inherent complexities in calculating rental income and allowable losses.

This research establishes the effect taxing imputed rental income would have on the horizontal and vertical equity of the existing UK and US income tax systems. In

³⁹⁸ White House office responsible for devising and submitting the president's annual budget proposal to Congress.

both cases, horizontal equity would be hindered with respect to alternative investors, while significantly improved with respect to the tenant / landlords. More interesting, the inclusion of an imputed rental income reduces the progressivity of the UK income tax system, whereas the US income tax system becomes more progressive with its inclusion. This is substantiated by the results of all three structural indices³⁹⁹ as well as the Suits indices⁴⁰⁰. These results provide a basis on which to consider this issue in greater detail within the respective countries' tax systems and/or with regard to other countries' tax systems for comparison.

While the economic case for imputed rental income taxation is strong, the administrative and political cases against such taxation are equally valid. Undoubtedly, the biggest obstacle is the public perception of fairness. The concept of taxing homeowner occupiers on income that is not discernible from an actual cash flow is a 'hard sell'. Also, homeowners with greater taxable home equity are predominantly elderly individuals. Given the current economic circumstances in which public and private pensions are being revised, taxing homeowners who may be facing reduced retirement income would undoubtedly raise further public protest. In fact, few countries still administer such a policy in spite of its economic justification (Haffner, 2002).

Several academics in favour of imputed rental income taxation have proposed property tax proxies (Fender, 1986, Muellbauer, 1987, Callan, 1992, among others). It is conceivable that the existing property tax systems may be more efficient vehicles for taxing homeowners with greater abilities-to-pay than the introduction of taxing imputed rental income as the systems for property valuation are in place and the taxpayers have already accepted such methods of taxation. Vertical equity would call for a proportional or progressive property tax rate structure. The regressive nature⁴⁰¹ of the UK property tax system would require reform on these grounds.

³⁹⁹ The reader is referred to Tables 7.19 and 7.20 of Chapter 7 (Equity effect of increased neutrality and a decomposition of subsidies) for these results.

⁴⁰⁰ The reader is referred to pages 344 and 345-6 for these results.

⁴⁰¹ The regressivity of the UK property tax systems is established and discussed in Section 6.1.4 of Chapter 6 (An evaluation of vertical equity).

The US mortgage interest deduction

This research identifies and quantifies the significant horizontal and vertical inequities regarding the US mortgage interest allowance. While horizontal inequities are not realised at the lower levels of income and investment, they are quite significant at the higher end of the income spectrum as a result of the inherent vertical inequity. Only those taxpayers able to itemize their deductions benefit from the mortgage interest and real estate tax reliefs. Elderly homeowners with little or no mortgage debt and low to middle income taxpayers with relatively modest debt may well not exceed the statutory standard deduction, and therefore will not benefit from these reliefs in the US tax code. Table 5.13 of Chapter 5 (An evaluation of horizontal equity) on page 187 reflects the relationships of the income tax obligations borne by the alternative investors in proportion to the income tax obligations borne by the homeowner occupiers, the variations being entirely due to the mortgage interest and real estate tax deductions. Table 5.13 reflects the fact that the horizontal inequities are slight at the lower tiers and are an increasing function of the value of the tax discrimination involved. The lowest tiered alternative investor has a cumulative income tax obligation of 4.0% in excess of the homeowner occupier at the same level of income, whereas the highest tiered alternative investor experiences a 20.8% excess income tax obligation. In conclusion, this research substantiates the fact that the magnitude of horizontal inequity resulting from mortgage interest and real estate tax relief is greatest at the highest levels of income and investment.

Academics⁴⁰² have criticized the mortgage interest deduction for decades based on efficiency and equity grounds. It is not an appropriate tool to encourage homeownership. The UK, Canada and Australia have similar homeownership percentages without the allowance. Further evidence suggests that while the benefits from mortgage and real estate tax relief have significantly eroded over the past two decades, homeownership in the US has steadily increased. However, this research suggests that the benefits are enjoyed only by a minority of homeowners at the upper end of the income scale. Quite simply, higher income households have a greater probability of itemizing their deductions. This may be for no other reason than the

⁴⁰² Academics including Litzenberger and Sosin (1978), Rosen (1989), Wood (1990), Berkovec and Fullerton (1992), Follain, Ling and McGill (1993), Baroussa and Grigsby (2000), Glaeser and Shapiro (2003), Poterba and Sinai (2008).

fact that they tend to have greater monetary investments in the home with correspondingly larger mortgage debt on which the interest is calculated. Further, as the deduction is allowed at the marginal rate of tax, which is greater at higher levels of income in a progressive tax system, it is worth more. This is established throughout the research and with specific references to Section 5.1.3 of Chapter 5 (An evaluation of horizontal equity) and Section 7.1.1 of Chapter 7 (Equity effects from increased neutrality and a decomposition of subsidies).

Vertical inequity is not as easily identified as horizontal inequity given the fact that vertical equity is more a matter for political and social debate. That said, it would be reasonable to postulate that larger housing subsidies ought to be targeted at lower income groups, particularly if the goal is to encourage homeownership at the margin. The failure of the current US income tax system in this regard ignores the basic principle of vertical equity as larger benefits accrue to those with greater wealth. The current mortgage interest and real estate tax deductions significantly reduce the progressivity of the US income tax system because of their inequitable distribution. This is established in Section 6.1.3 of Chapter 6 (An evaluation of vertical equity). Figure 6.11 on page 264 illustrates this vertical inequity by setting the measures of Suits indices from the simulated income tax data for all three investors over the 20-year period of study into a graphical illustration. As is evident from this figure, the homeowner occupiers experience far less progressivity in the income tax system in comparison with the alternative investors and the tenant / landlords. This is further evidenced by similar results for the structural analyses in Section 6.1.3.

The proposal for mortgage interest credit as an alternative to the mortgage interest deduction has emerged in the literature (Litzenberger and Sosin, 1978, Green and Vandell, 1999, Bourassa and Ming Yin, 2008, Toder *et al.*, 2010, Hilber and Turner, 2010 and Pozen, 2011). Tax credits are proportional and thereby more equitable than tax deductions which tend to be regressive. If the goal is to provide assistance to all families financing their home purchase with debt, a non-refundable credit would ensure that lower and middle-income taxpayers actually receive the intended tax benefit.

President Obama has made several attempts at reforming the current mortgage interest deduction. In the Final Report from the National Commission of Fiscal

Responsibility and Reform (December 2010), it was proposed that the deduction be replaced with a 12% tax credit calculated on no more than \$500,000 in mortgage indebtedness, eliminating the provision for second residences and home equity loans. The report failed by a few votes two days later. In the 2012 Budget, the President has called for a 28% cap on the tax rate applicable to itemized deductions. This would affect taxpayers with \$250,000 of taxable income and greater. While these measures seem reasonable to the academic considering tax equity, representatives from the National Association of Realtors and the National Association of Home Builders are very vocal in their opposition. These are particularly influential lobbyists, having spent a combined \$65.8 million on Capitol Hill between 1989 and 2012 according to the Center for Responsive Politics (2012). Tax reform impacting housing has been and will continue to be a politically sensitive matter in the US.

This research establishes the effect that removing the mortgage interest deduction would have on the horizontal and vertical equity of the existing US income tax system. Both horizontal and vertical equity significantly improve with its removal as established in Section 7.1.1 of Chapter 7 (Equity effects from increased neutrality and a decomposition of subsidies). More importantly, this research establishes that the majority of US homeowners would not mourn the loss of this very expensive tax subsidy, as the majority of taxpayers do not benefit from it. However, the minority of taxpayers who would be affected by the removal of this deduction are the wealthy and the more influential taxpayers in the US.

The multi-layered, comparative micro-simulation methodology employed in this research has provided a sound platform from which to consider policy issues and reform implications regarding the tax treatment of homeowner-occupiers. The evaluation of the horizontal and vertical equity of the specific and overall tax policies required the establishment of clear model parameters. The parameters are a combination of constant and variable data and reasonable assumptions. The next sub-section reconsiders the set parameters that might be used in future research.

9.3.2. Micro-simulation variable modifications to further inform on owner-occupied housing tax policies.

The constant and variable data used and the assumptions made in calibrating the micro-simulations within this research may be modified to provide additional and/or alternative data for further future examination.

Multiples of income

Five multiples (i.e. ½-, 1-, 2-, 4- and 5-times) of the median income were used in this research. By including case families half of the median wage, the scope is wide enough to include:

- UK case families invested in real estate below the stamp duty threshold;
- UK case families falling within Band A for council tax purposes;
- UK case families selling rental real estate below the capital gains annual exemptions;
- US case families in the lowest income tax bracket; and
- US case families in the lowest capital gains tax bracket.

With the highest tier set at five-times the median wage the scope is widened enough to include:

- Higher rates of stamp duty land tax in 5-year rolling UK simulations;
- Higher rates of US income and alternative minimum taxation;
- US case families invested in rental real estate exceeding the income level in which passive activity losses are allowed.

While these multiples were deemed appropriate to ensure a fair and reasonable representation of income distribution as well as an adequate reflection of the respective tax brackets in both countries, other multiples may now be considered. For instance, the researcher may consider adding another five levels of income and investment for analysis (i.e. ¾-, 1.5-, 3-, 7-, and 9-times the median income). The results from additional levels of income and investment may be added to the existing results for enrichment purposes.

Family demographics

A non-working spouse and two dependent children are common assumptions made in micro-simulation research (Haffner, 2000, Norregaard, 1990, and OECD, 1980) and these were the assumptions made in this research. The non-working spouse assumption enabled the researcher to highlight common tax planning strategies within the UK income and capital gains tax systems. However, such an assumption may be dated as the ability to stay home with the children may be seen as a luxury the vast majority can no longer afford.

The existing micro-simulations may be modified to consider two median income earners, one median income earner and one earning half the median income, or one median income earner and one earning twice the median income. Such a modification would significantly impact the UK tenant / landlord results and those of the homeowner occupiers under V2 and V3 (with reference to Chapter 7), given the absorption of the personal allowance and lower tax bands with wage income as opposed to rental income.

Levels of investment

An assumption was made that the three investors had 50% of their 1990 median income available for investment. It was further assumed that the real property investors secured mortgage financing that was 250% of their 1990 median income. Subsequent equity investments of the alternative investors were based on the amortised principal payments of the real property investors over the twenty-year period studied, equally distributed per annum. Such assumptions were deemed reasonable and comparative, but may be altered to consider different debt-to-equity mixes and alternative levels of subsequent equity investment by the three types of investors. A simple alteration to the debt-to-equity mix would not compromise the integrity of analysing the tax impact. However, if the subsequent levels of equity investments were not equalised between the three investors, the variations would encompass more than simple tax differences.

General and house price inflation

It was assumed that the wages, house values and alternative securities appreciated annually by three per cent in both countries. This was deemed a reasonable rate based on the general levels of inflation, wage inflation and housing appreciation in both countries over the twenty-year period of study.

Given the significant decline in house values in certain areas of both countries, a modification to the original simulations assuming no-growth and/or negative-growth may be of interest. However, by keeping the rates of inflation and growth constant and consistent between investors in both countries, the researcher is isolating the effect of tax policy in the simulations. If rates were variable, the differences between investors within and across countries would encompass differences in growth as well as the tax variations.

Mortgage terms

The simulations may be modified to reflect different mortgage terms from those which were assumed in the UK and US simulations. Given the significant differences in mortgage products between countries, this is an area worthy of further research. Such research, however, is a separate line of inquiry going beyond that of analytical tax research such as this.

Long-term fixed-rate mortgages are common in the US and the simulation assumed a 30-year fixed rate of 7%. Such terms are not available in the UK market and the author therefore assumed a repayment mortgage that tracked the Bank of England rate throughout the period of study, with an additional 1%. This was deemed reasonable in UK market terms and comparable to the US simulation, given the repayment of principal. The UK mortgage terms were a compromise for the sake of comparability, given the general preference for endowment mortgages in the UK in the early 1990s. As these types of mortgages have since lost their appeal and are now relatively rare in the UK market, and are not comparable to any US mortgage product, the author believed such a compromise was in order. That said, mortgage terms may be altered within the existing simulations relatively easily, to highlight changes in tax subsidies as a result of changes in mortgage terms.

Alternative investment income

The alternative investors in the UK and US simulations were assumed to be invested in wholly capital appreciating securities to ensure comparability with the real property investors of the study. This may be an assumption worth reconsidering in order to highlight the differences in cash flows as well as income taxation and capital gains taxation within and across countries. Such an alteration, however, would necessitate a variation between the capital appreciation rates of the alternative capital and housing as the securities markets naturally adjust capital appreciation to reflect dividend and interest payments.

US imputed rental income

Eight possible scenarios were considered and briefly discussed with regard to the determination of imputed rental income in the US income tax system. The first issue is the depreciation allowance and whether or not to allow such a provision in calculating a net imputed rental income. The second issue is with regard to the allowance of rental losses against general income. For comparability purposes with regard to the US tenant / landlords, depreciation was allowed and losses were immediately deductible with reference to the passive activity loss rules in legislation in the US simulation.

The simulation may now be modified to disallow depreciation and/or disallow or limit the rental losses. If the rental losses are limited in accordance with the treatment of activities not-for-profit under US legislation, rental expenses will be permitted to offset rental income provided the taxpayer(s) itemize deductions. An alternative to this scenario is not to make such an allowance conditional on itemizing deductions. However, this alternative is not reflective of any current US provision. The other possible scenario considered in Section 7.1.2 is to ‘ring fence’ unutilised losses as determined under the passive activity loss rules, permitting them to only offset future rental income from the same property. This would have a significant impact on the higher-tiered homeowner occupiers who are able to significantly reduce their income taxation in the year of disposal as demonstrated in this research. Such a restriction, however, is not consistent with the legislation applicable to the

tenant / landlords and would create significant horizontal and, arguably, vertical inequities.

9.3.3. Other policy issues conducive to micro-simulation research

The multi-layered, comparative micro-simulation approach established in this research may now be adapted to examine the tax equity of other policy issues in either or both countries.

The different tax treatments of the employed and the self-employed individuals in both countries is an area conducive to this type of modelling and analysis. The differences in expense deductibility and social security (US) or national insurance obligations (UK) give rise to horizontal and vertical inequities that may be quantified and evaluated on within-country and across-country bases.

The favourable tax treatment of certain retirement instruments is another area of research interest conducive to multi-layered, comparative micro-simulation. For an example within the US income tax system, an investment in a *Roth* Investment Retirement Account (IRA) may be directly compared with an investment in a traditional IRA. The difference between the two is when the tax concession is granted: the former is on withdrawal and the latter is on investment. As demonstrated in this research, the time value of money significantly influences inherent horizontal and vertical inequities.

This research illustrated the significant impact the tax unit may have on tax obligations, thus creating, increasing or decreasing inherent horizontal and vertical inequities. The UK separate tax units may be directly compared with a hypothetical tax system which recognises a married couple unit and/or the family unit. Similarly, the marriage penalty inherent in the married-filing-joint filing status has been an area of political interest in the US. This may be fully examined in terms of horizontal and vertical equity under micro-simulation modelling.

The current income tax systems of either or both countries may be compared with a hypothetical comprehensive income tax system and/or an alternative consumption tax system. By clearly establishing the models' parameters, it is feasible that this

type of research may be particularly informative in this area of current interest as the tax impact of the alternative tax scenarios is measurable under micro-simulation.

These are just a few of the possible alternative applications of the working models established in this research. The time-frame may be extended or limited to suit future objectives. While the current models are calibrated for the UK and US tax systems, other countries' tax systems may also be considered. The Excel spread sheet that determines the respective countries' tax obligations underpins several other spread sheets which analyse the generated data. The underlying data (i.e. alternative countries' tax obligations) may be adjusted accordingly without losing the integrity of the analyses. With these models, horizontal equity may be evaluated under its classical definition and the vertical equity evaluation considers both structural and distributional progressivity measures. The detailed analyses of both horizontal and vertical equity from simulated data, coupled with the structural and distributional vertical equity analyses, form an original synthesis and provide a solid platform on which to consider future alternative equity evaluations.

9.4. Contribution to knowledge

This research provides a comprehensive, comparative study of the UK and the US tax systems, establishing the extent to which horizontal and vertical equity is compromised by the respective favourable homeowner tax treatments within an optimal tax framework. By simulating actual tax liabilities determined at selected points on the income and investment scale, the researcher is able to accurately determine the inequities for evaluation.

A gap in the literature existed for an extensive comparative analysis of the specific owner-occupied housing tax policies and their interrelationship with respect to the complex overall tax systems in which they are present. With reference to the criteria established by Oxley (2001), this research contributes to the middle/high range of comparative analytical work on housing taxation. The research is set within a comprehensive theoretical framework and systematically compares two countries' specific tax policies and their overall impact on the respective personal tax systems. A consistent methodology is applied within the respective countries' studies, thus ensuring a robust dual-nation comparison.

The research provides empirical work that has not been conducted before. The UK and US tax systems form the models on which the simulations are based. The actual tax liabilities of individuals invested in homes for occupation at five levels of income and investment are simulated and evaluated with reference to alternative investors and individuals invested in rental real estate. By assuming identical circumstances and isolating the investment choice as the sole variable in the simulations, the tax inequities stemming from homeownership are identified and quantified.

There is an attempt within this research to replicate results by similarly extending the structural indices. In so doing, the researcher is testing the transferability of the methodology established by Suits. It is also, to the knowledge of the researcher, the first attempt to extend the structural indices established decades earlier. The results from two of the three structural measures are inconsistent with each other and the results from the Suits indices are therefore not believed to be informative. However, the results from the extended Liability Progression of both countries are indeed consistent with the results of Suits indices. This is an interesting observation and may be indicative of the transferability of the Suits methodology, which will warrant further research beyond the scope of this project.

The multi-layered, comparative micro-simulation methodology established within this research enables the author to appraise conventional wisdoms and proposals for future policy in light of the resulting evidence of the impact of housing tax policies on a range of taxpayers. The (alleged) inequity of homeowner taxation due to fiscal favouritism is an old issue and there exists a significant branch of literature⁴⁰³ proposing reform in several countries. The solution commonly proposed is that the taxation of homeowner occupiers should be tenure and tax neutral in that imputed rental income and capital gains should be taxed. Therefore, in addition to comparing the homeowner occupiers' tax treatment with other investors, micro-simulations in this research consider three hypothetical tax scenarios with improved levels of neutrality. This enables the researcher to adequately address the call for greater neutrality of owner-occupied taxation by the OECD. The research takes the two countries' tax systems (set in time) and identifies and quantifies the changes in horizontal and vertical equity with incremental improvements in neutrality. The first

⁴⁰³ This includes O'Sullivan (1986), Flood and Yates (1989), Wood (1990), Hancock and Munroe (1992), Haffner (1999 and 2000), OECD (2001), Van Den Noord (2001), among others.

improvement is the removal of the mortgage interest relief. Secondly, net imputed rental income is included in the income tax base. Finally, the capital gains realised by the homeowners on disposition are included in the capital gains tax base. In addition to providing a platform on which to consider the equity effects from increased tax neutrality, the analyses of the hypothetical scenarios allows for a decomposition of the existing tax subsidies for a deeper evaluation of horizontal and vertical equity.

The twenty-year time frame of study incorporates several reforms and modifications to specific tax policies in both countries. The impact of these changes on horizontal and vertical equity is established through modified simulations employing a five-year rolling methodology. This modification enables the researcher to establish the impact UK acquisition taxation now has on homeowner occupiers. Where they were the tax advantaged case families in the beginning of the study with respect to MIRAS, the homeowner occupiers are shown to be significantly disadvantaged in comparison with the alternative investors in the later years of the study as a result of SDLT. Further, the research offers a basis on which to consider the impact of the changes to capital gains taxation in both countries.

The effect of the standard deduction on the value of the mortgage interest relief in the US income tax system has received relatively little attention to date with the notable exceptions of Giertz and Sullivan (1978), Follain and Ling (1991) Follain, Ling and McGill (1993), and Poterba and Sinai (2008). This research makes a significant contribution by clearly illustrating this effect and measuring the resulting vertical inequities.

The research methodology in general and the simulation models produced in particular are adaptable to other tax equity considerations in either or both countries. Examples may include the evaluation of the taxation of employment and self-employment income, the favourable tax treatment of certain retirement instruments, alternative tax units, consumption versus income taxation, etc. Working models have been established from which future research may accurately identify and quantify horizontal and vertical inequities. Within these models, horizontal equity may be evaluated under its classical definition and the vertical equity evaluation considers both structural and distributional progressivity measures. The detailed

analyses of both horizontal and vertical equity from simulated data, coupled with the structural and distributional vertical equity analyses, form a synthesis that has not been achieved before and provide a basis on which to consider future equity evaluations.

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